NORTHERN ILLINOIS UNIVERSITY

GUIDE TO WORKSHOP INSTRUCTION FOR THE PRAXIS I – MATH

A Thesis Submitted to the

University Honors Program

In Partial Fulfillment of the

Requirements of the Baccalaureate Degree

With the University Honors

Department of

Special Education

by

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HONORS THESIS ABSTRACT
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Abstract:

The Guide to Workshop Instruction for the PRAXIS I - MATH was designed to provide guidance for students hired to teach the PRAXIS I Math Workshop. In order to be a~itted to Teacher Education at Northern Illinois University, the College of Education requires that students pass all three sections {math, reading, and writing} of the standardized, norm-referenced PRAXIS I: Academic Skills Assessments {PRAXIS I}.

The guide provides instructional materials to teach students to solve typical math problems. The guide includes "Basic Information" on overheads which provides problems selected for instruction that will aide in teaching specific strategies for certain problem types. Included are example geometry, measurement, probability, percent, and age and work word problems. Also provided are explanations for solving the example problems.

The guide also includes four example tests and answer keys with explanations. The tests and answer keys were developed to assess students' understanding and to be used for practice and review prior to their actual PRAXIS I math exam. The example test may also be used for tutoring purposes.

BIBLIOGRAPHY

Bobrow, Jerry. Cliffs Math Review for Standardized Tests. Lincoln, NB: Cliffs Notes Inc, 1985.

Bobrow, Jerry. Cliffs Pre-Professional Skills Tests Preparation Guide. Lincoln, NB: Cliffs Notes Inc, 1987.

Praxis Series - Tests at a Glance. Princeton, NJ: Educational Testing Service Publications, 1984.

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Silbert, J., Carnine, D., and Stein, M. Direct Instruction Math. New York, NY: Macmillan Publishing Co, 1990.

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Date: ~.ch r; I,fffR

In order to be admitted to Teacher Education at Northern Illinois University, the College of Education requires that students pass all three sections (the math, reading and writing) of the PRAXIS 1: Academic Skills Assessment~ (PRAXIS 1). The PRAXIS I can be administered in traditional paper and pencil format (the Pre-Professional Skills Test (PPST» or on computer (PRAXIS 1 Computer-Based Test (CBT». The Praxis 1 is a standardized, norm-referenced exam.

Purpose

The purpose of this Guide to Workshop Instruction for the PRAXIS 1 - Math is to provide guidance for students hired to teach the PRAXIS·Math Workshop.

13ackground

A task analysis of the PRAXIS I, the parts of the test, and the types of ski11s tested was done. The test inc1udes five content categories: conceptual knowl edge, procedural knowl edge, representations of quantitative information, measurement and informal geometry, and formal mathematical reasoning.

According to the PRAXIS Series - Tests at a Glance by the Educational Testing Service (1994) the following is representative descriptions of topics covered in each category:

Conc~ual Knowledge problem types test the abi1ity to "demonstrate number sense and operations sense (whole numbers, fractions, and decimals)" (p.54).

Examples include:

A) 3.42 is between
a. 3.04 and 3.3 b. 3.43 and 3.59 c. 3.03 and 3.41
d. 3.4 and 3.6 e. 3.3 and 3.4

B) Which of the following is the least
a. 9/8 b. 28/29 c. 8/4 d. 2/1 e.36/35

Procedural Knowledge problem types test the ability to "demonstrate an understanding of the procedures required to represent quantitative relationships and the ability to plan, execute, interpret, or complete operations to solve problems" (p.54).

Examples include:

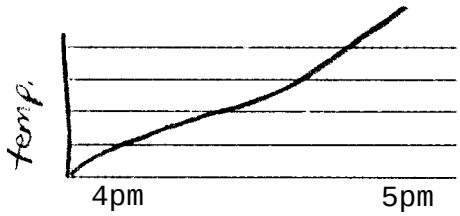
A) In order to pass a test, a student must answer 27 questions correctly in order to receive the lowest passing grade of 75%. How many questions are on the test?
a. 102 b. 54 c. 72 d. 36 e. 64

B) What is the probability of tossing tails three consecutive times with a two sided fair coin?
a. 1/3 b. 1/6 c. 1/8 d. 1/9 e. 2/3

Quantitative Information problem types test the ability to "demonstrate an ability to interpret visual displays of quantitative information, to retrieve information from data, to determine if statements based on data are true or false, to recognize relationships in and make inferences from data, and to represent a given set of data graphically" (p.54).

Examples include:

A)



According to the graph above, what was the temperature at 4:40 pm?
a. 70 b. 75 c. 80 d. 90 e. 95

B) Tips Earned Chart

	EmQloyees				
	Cesar	Bertha	Jim	Pat	Javier
Monday	~1	$3	~2	$6	$8
Tuesday	8	4	4	5	3
Wednesday	5	3	6	2	1
Thursday	7	8	5	4	3
Friday	4	7	6	3	5

According to the chart, on what day did Javier earn as much money in tips as Jim earned on Thursday?
a) Monday b) Tuesday c) Wednesday d) Thursday e) Friday

Measurement and Informal Geometry problem types test the ability to "demonstrate a basic understanding of the U.S. customary and metric systems of measurement and of geometric properties and relationships" (p.54).

Examples include:

A) 

What is the perimeter, in inches, of the rectangle above?
a) 5 in. b) 12 in. c) 12 ft d) 34 in. e) 60 in.

B) If a finger was measured in millimeters, the length expressed in centimeters would be?
a) twice as great
b) half as great
c) ten times as great
d) one-tenth as great
e) one-hundredth as great

Formal Mathematical Reasoning problem types test the ability to "demonstrate an ability to use the basics of logic in a quantitative context" (p.54).

Example include:

A) x and yare multiQles of 6

Which of the following can NOT be true according to the statement above?
a) x=l, *y=6* b) x=-2, *y=-3* c) x=-2, *y=3*
d) x=-6, *y=-l* c) x=2, *y=3*

B) If x is a positive integer in the equation 4x=y, then y must be
   a) a positive even integer
   b) a negative even integer
   c) zero
   d) a positive odd integer
   e) a negative odd integer

Most university students have many math skills; however, it is not unusual for students to have deficits in one or more of the five problem type categories. In order to determine areas of deficits, four tests similar to the PRAXIS I were developed to assess deficits and to measure progress. Instructional materials were developed to teach students to solve typical problems. Overheads with Basic Information and problems were developed and/or copied from Cliffs Math Review for Standardized Tests (Bobrow, 1985) to illustrate various problem solving techniques.

As previously stated, four tests were developed and made available with answer keys for tutors and instructors to use to check students' understanding prior to their actual PRAXIS I math exam. Test I, used as a pretest, has been designed to provide specific information regarding the five problem types. The first 30 problems of the test are categorized by problem type for easy analysis of a students' deficits. The last 10 are a mix of problem types for further analysis of weaknesses.

Test 2, 3, and 4 were designed based on commercially available practice tests. The tests were designed in this fashion because when instructing a workshop (using the commercially available tests), students often need additional problems to practice and/or the instructor needs to assess understanding of a certain problem

type. Through the availability of Tests 2, 3, and 4 (which coincide with the commercially available tests being used), instructors are readily able to pullout further example, practice, and/or assessment problems.

Test 2 was designed based on the practice test in The PPST Guide (by Educational Testing Service, 1986); the order of the problems and the problem types coincide with those on The PPST Guide math test. Test 3 was designed based on Test 1 in the CLIFFS PPST Preparation Guide (1987); the order of the problems and problem types coincide with Math Test 1 in the CLIFFS guide. Test 4 was designed based on Test 2 in the CLIFFS PPST Preparation Guide (1987); the order of the problems and problem types coincide with Math Test 2 in the CLIFFS guide.

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Bobrow, Jerry. Cliffs Math Review for Standardized Tests. Lincoln, NB: Cliffs Notes Inc, 1985.

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Silbert, J., Carnine, D., and Stein, M. Direct Instruction Math. New York, NY: Macmillan Publishing Co, 1990.

The PRAXIS I Math Workshop is divided into two, 2-hour sessions. Session 1 consists of teaching strategies and reviewing information that will be needed to successfully solve problems on the PRAXIS 1 Math Test. The PPST Guide Test is also demonstrated in Session 1; it is used to teach further strategies and as a practice test. In Sessions 2 questions students have about specific problem types on Test 2 are demonstrated. Also in Session 2, problem types about which students have questions are reviewed and overall test taking tips/reminder are presented.

The first part of workshop 1 includes providing basic information and teaching specific strategies for certain problem types (overheads 1-12). The "Basic Information" and problems selected for instruction were chosen through an evaluation of common problems of previous students. The Basic Information provided is just that; basic information that students learned but many times do not remember.

The Basic Information is given to help students answer measurement, metrics, and geometry problems. Having the knowledge and the strategies/ability to answer these problem types is a concern many students have expressed. There are also example percent, probability, age, work, and measurement problems; again, problem types chosen because of the concerns expressed by previous students. Evaluations of previous workshops showed that students felt that the information was most helpful.

MATH SESSIONS 1 & 2: INSTRUCTION TIPS AND SUGGESTIONS FOR TEACHING:

Session 1:

1. Pass out the packet of handout consisting of:
   a. PPST Guide Test (By: Educational Testing Service Pub.)
   b. CLIFFS Test 2 (By: Ciffs PPST Preparation Guide)
   c. Skills Assessed in PPST Math (By: Vicki Wohlt)
   d. Workshop/Instructor Evaluation (By: Vicki Wohlt)

2. Briefly introduce yourself, describe the materials handed out, and introduce The PPST Guide and CLIFFS books as *resources.* Remind students that they *are* all at the workshop for the same reason; tell them to be sure to ask questions if they do not understand something and to stop you if you are going to fast.

3. Go over "basic information" and teach strategies. (Overheads 1-12). Examples and wording of how overheads may be explained are provided. See "Strategies".

~ Work through the PPST Guide Test.

Tell students to mark/ask about problems they are having trouble understanding or want more examples of. If needed give them similar problems from the tests provided. (Test 2 coincides with this particular test.)

Work through the test page by page. For example, put the overhead with problems 1-4 on the overhead (PPST Guide p. 47). Allow student 5 minutes to work problems 1-4 then stop them and give the answers to problems 1-4. Ask students what

problems they have questions about or would 1ike you to demonstrate. Demonstrate those probl ems. For sol utions (explanations and answers) see Answer Set A. continue working through the test in this fashion.

For each page allow students one more minute then the number of problems on the page to work on problems independently. This timing procedure is suggested to closely simul ate the time a11owed for the PRAXI S I. Counting the number of problems and giving students one more minute provides the students with a total of 47 minutes to complete the 40 problems. Students actually are arlowed 50 minutes to complete the test.

I have found from previous workshops that students prefer being timed. It allows them to feel the pressure they feel on the test date. By giving answers and asking students to tell you which problems to demonstrate/review, time is not being wasted going over problems that everyone has got correct.

8. If time permits, ask students if there are problem types they want reviewed. If so, provide these problem types using the tests provided.

9. Have students take home the Cliffs Test 2. Tell them to put 50 minutes aside and complete the test.

10. Have students complete and hand in evaluations.

SESSION 2

1. Go through CLIFFS's Test 2. Give students the answers (page by page) and work through the problems students would like demonstrated/reviewed. For explanations see Answer Set B.
2. Review/demonstrate any problem types students want to review. Use the tests available for the example problems. Use the tests available for the example problems.
4. Remind students that the workshop is a review and that they need to look over material and get the CLIFF's book if they feel they need it.
5. Remind students that tutoring is available. If they want tutoring they can contact:

   Vicky Wholt's Office
   Graham Hall 433
   (815) 753-1729

STRATEGIES

OVERHEAD 1

(Give students time to copy the information)

A. This measurement information is basic information that will be useful to know.

B. This metrics information is very easy to remember. Instead of memorizing the place value of each meters, grams and liters (the whole chart), only learn the prefix.

kilo	hecto	deca	(unit)	deci	centi	milli
k_	h_	da_		d_	c_	m_

You can insert grams, liters, or meters in the blanks. By knowing the basic information (prefixes) you can convert a given value into a value you are familiar with (e.g. convert hectometers into meters, decigrams into kilograms, etc).

C. This information is to be used as a bench mark. This information allows you to convert any given value into a value you know. We'll work through examples.

(Work problems on OVERHEAD *2* - see next page)

Overhead 1

MATH

IMPORTANT BASIC INFORMATION

A. **Measurement**

1 ft = 12 inches

1 yd = 3 ft = 36 inches

1 mile = 5280 ft = 1760 yds

B. M~~~LS

km	**hm**	**dam**	m	**dm**	**cm**	**mm**
kg	**hg**	**dag**	g	**dg**	**cg**	**mg**
kl	**hi**	**dal**		**dl**	**cl**	**ml**
.001	**.01**	.1	1	**10**	**100**	**1000**
k\'\o	hecA-o	deeD-	(Ui\\-t)	~-e.c·\	<:.en-t~	fn\ \t ;
k_	~ -	dQ_		Θ -	<:.-	(Y\ _

C. **1 meter is a little more than a yard (= a little more than 3 ft)**

1 kilogram is about 2.2 lbs

1 liter is a little more than a quart

Overhead 2

Measurement

1. The length of a yardstiCk'd lkm
   · a. 5m ~ 1m c• lOan ·

2. The weight of an average wanan·
   ~ 60kg h. 6kg c. 60g d. 60m

3. The height of an average man.
   a)1.7km b)1.7mm c)1.7cm d)1.7m

4. **A crayon was measured in mi11imeters, the 1engths expressed in centimeters wQuld be**
   C~ IV) **one tenth as great**
   b. one hundredth as great
   c. ten times as great
   d. one hundred times as great

k _ h___ da____ ____ d___ c__ m__

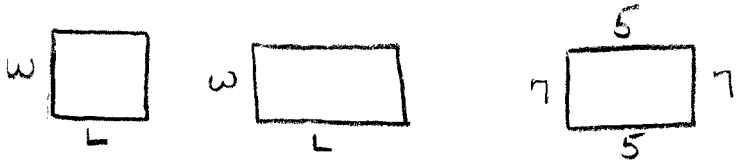
OVERHEAD }

Al B, and C.

This is all of the information you need to know to complete the geometry problems on the test.

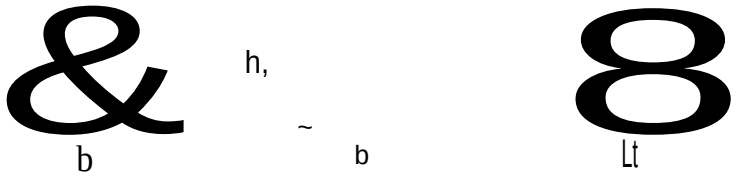
A. The area of a square or rectangle is the length times the width.

(Show examples: Ask: What is the area?) *V~':)')*



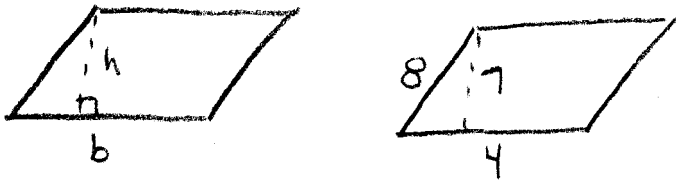
The area of a triangle is half of the base times the height. The height is always the vertical line; the line that runs straight up and down.

(Show examples: Ask: What is the area?) (2~)



The area of a parallelogram is the base times the height. Again, remember that the height is the vertical line; the line that runs straight up and down.

(Show examples: Ask: What is the area?) ~32)



O''e,heo.d 3

Math

More Basic Information

A. Area of a square or rectangle = L x W

Area of a triangle = *1/2* bh

Area of a parallelogram = b x h (same as L x W)

E. A straight line = 180^{o}

A triangle (inside) = 180^{o}

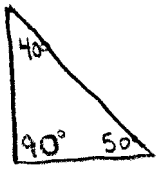
A circle = 360^{o}

C, Perimeter = add all of the sides

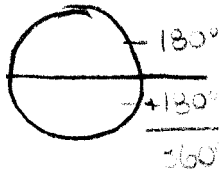
D. A prime number can only be divided by 1 and by itself

B. A straight line is 180 .

The inside of a triangle (if you add up all of the angles) equal s 180\\.



A circle equals 180°.



Let's work through a problem where this information can be used.

(Work problem on OVERHEAD *4* - see next page.)

C. To find the perimeter you add all of the sides.

(Show examples: Ask: What is the perimeter?)

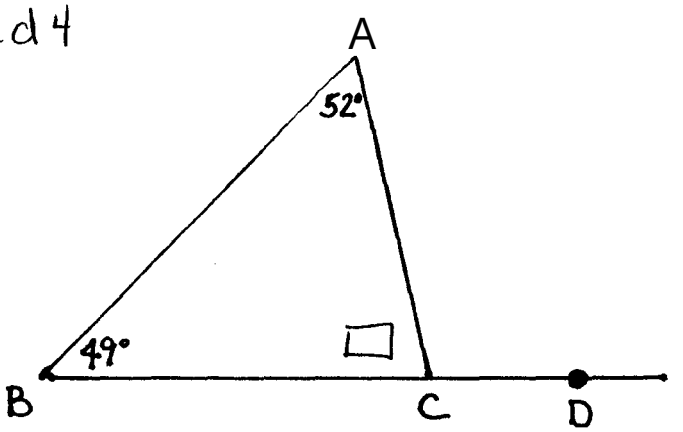
:*IS* ~D yJz ~~~)

5 (lq) U(o')

D. A prime number can only be divided by 1 and by itself

For example 3, 13, 29, 37, etc

Overhead 4



What is the measure of.lACD? *(101°,*

7N~~~~ *:180'"*

(D j– LJ:'v<Lt ~ ~ ~ O

(l j-W *~GJ~~* ~ Qf1\.4lJ.).

CD 6::2 + '-\~+ D := \ 'ao²

lo\+D::\~O

-t a \

1C1

~4' 7 10'

@ Qs~~~\~OO

CJ .+= × ~ 180~ ~")'

1f1 +- **X** = '<6o~

'f.. z: \~O

-\9

**to **

LAC\):::: \0'

(P -!'0)

OVERHEAD 5

Percentages

A. "of means to multiply

20% of 30 means .20 times 30

To convert a percent into a decimal move the decimal two places to the left.

20% = .20 = ~
too

A formula for solving percent problems is by setting up the,

ratio: $\frac{\text{is}}{\text{of}} = \frac{\text{is}}{\text{of}}$ 100

I'll show you an example.

(Work problem on OVERHEAD 6. See next page)

Overhead 5

Percentages

20% of 30 means .20 x 30

- "of" means multiply

is wp
of x 100

Over lve o d lo

Thirty students are awarded scholarships to college, this number comprises of 40% of the total number of students who applied. How many students applied for the scholarship?

(what percent)

(of how many)

? (-) 40 ~~ 30~/CX)-.::300(

\ OJ

ti·0 'i.. :: 300Q

and divide 15

40x = 3000
40 40

75 students

OVERHEAD 7

There are two ways to solve probability problems.

1. If you are finding the probability through one event you find the total number of chances

-b+o..\ ~\J\r\'\b~ of· fl(1'"~~,~b\\\+I€:'

(Work problems I, 2, and 3 on OVERHEAD 6 and OVERHEAD 7.

See next page.)

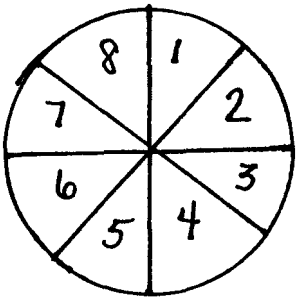
2. When finding the probability of two or more events they are independent of each other so you need to multiply the possible outcomes.

(Work problems 4 and 5 on OVERHEAD *i* and OVERHEAD 8.

See next page)

Over- hea cl 1

PROBABILITY



1. Using the ~ spaced spinner above, what is the probability of spinning a 4 or greater in one spin?

$\frac{\#\text{ of chances}}{\#\text{ of opportunities}} = \frac{5}{8}$

2. Using the spinner above, what is the probability of spinning either a 2 or a 5 in one spin?

$= \frac{2}{8} = \frac{1}{4}$

OVex-heo.d 8

Probability

3. What is the probability of rolling two dice in one toss so that they total 7?

Di~ \ D\~.;L

'.Q 5
5' 2
.3 4
'1 3
/ 6
b 1

#~cAML~ - lo 1
3t.c b
#1w·

~ ~ OJ'LL ~~ C2 M 'hifJ'J.u;-CU
ali.,u.la..(-jOLe 3lo ~-rf:u./J~A' ,

4. What is the probability of tossing tails four consecutive times with a two sided fair coin?

Evefl+s : ~ a ~ .1-
\A _.\ \:-1
"r , -r T

4;t<!/~~JJ _ \ 1 1 \
#-~~ - L. 2 2

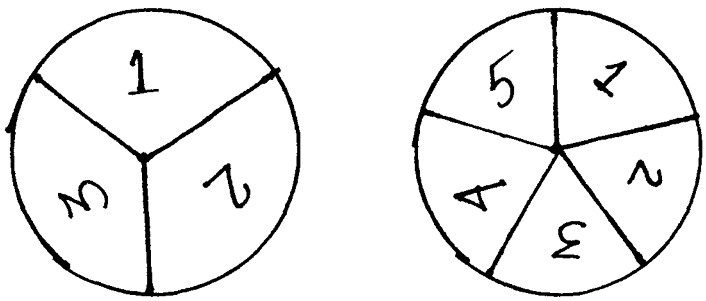
There is always two opportunities when tossing coins

From: Borbrow, 1987. p72

(p72)

Overhead 9

Probability



5. What is the probability that each of the ~guall~ **spaced spinners above will stop on a two on its first spin?**

£V£:NT EVENT

...ances

# of opps

From: Borbrow, 1987. p.72

OVERHEAD 10 and OVERHEAD 11

Many students have difficulty answering age and work word problems. The PRAXIS test you take will most likely have only one or two age or work problems. When working word problems it is best to write out the information you are given and to make sure you are answering what is asked. I'll show you some examples.

(Work problems on OVERHEAD 10 and OVERHEAD 11.

See next two pages.)

AGE

1. Clyde is four times as old as John. If the difference between their ages is 39 years, how old is Clyde?

4oJV)1., ~ y. tf y - y:c (1

Clyde :- L\)(

John = x = 13
Clyde = 4x = x 4
52

Clyde = 52

2. Matt is six years older thanHector. In two years Matt will be twice as old as Hector. Howald is Hector now?

'11 r -+-\. ' Lo + y: ...c> yw) —> 8 + X
\\..../\-,v\

t4 Cf' 'X tS~'- '~.)

Matt

X-t

X

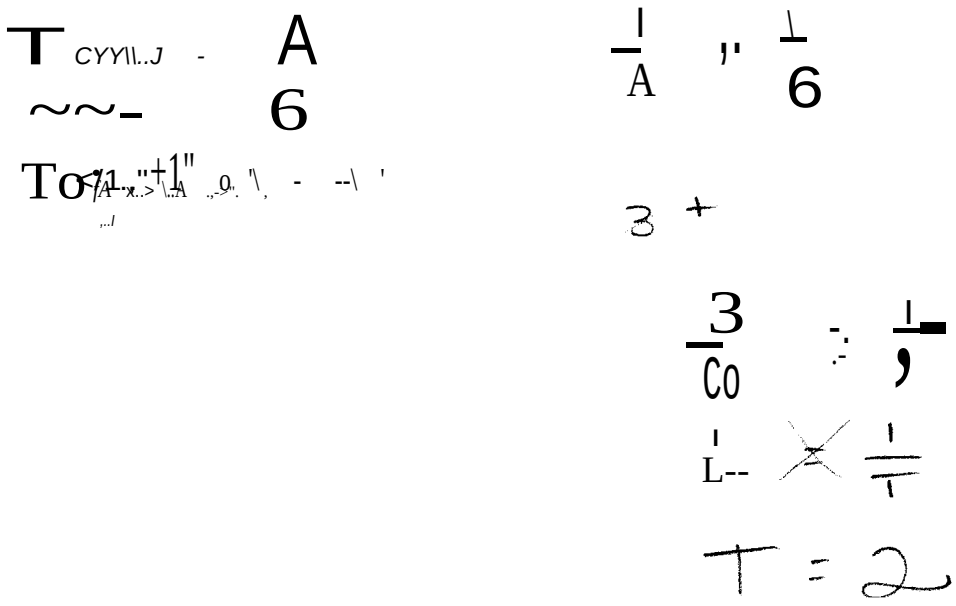
.-.-Y - -~.~.

'f :: (1

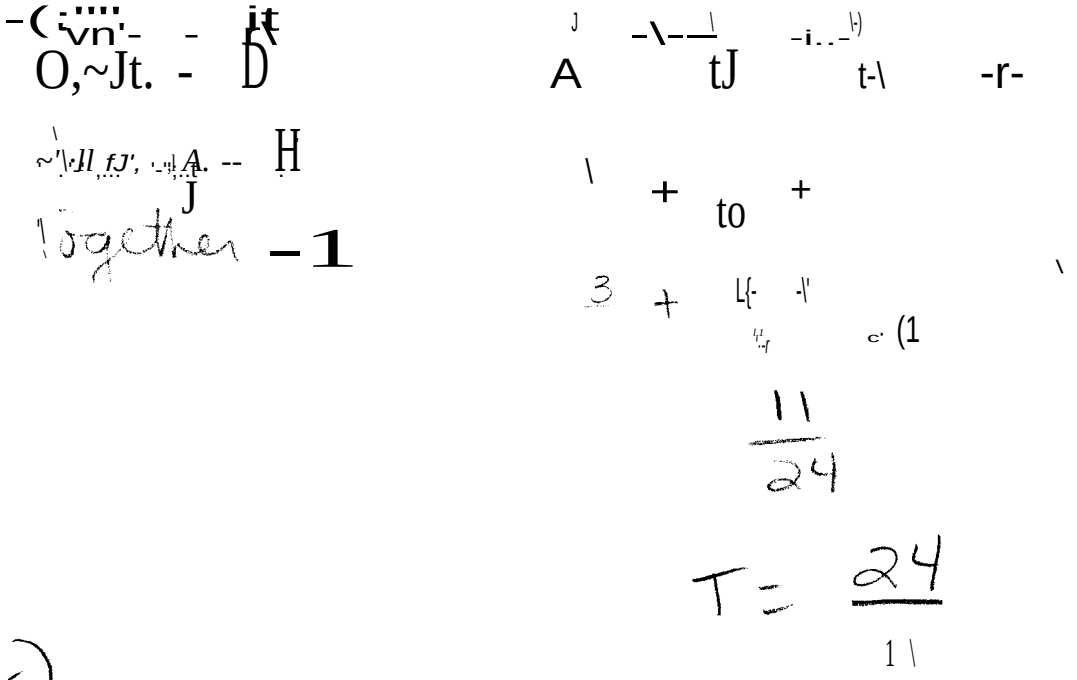
From: Borbrow, 1987 pp 291-293

(P 291-4

Tom can mow Harry's lawn in exactly 3 hours. Bill can mow Harry's lawn in exactly 6 hours. If Harry hires Bill and Tom to work together using 2 lawn mowers, how fast can they mow the lawn?



Tom paints a house in 8 hours. Dick paints a house in 6 hours. Harry also paints a house in 6 hours. How long will it take for Tom, Dick, and Harry to paint the house together?

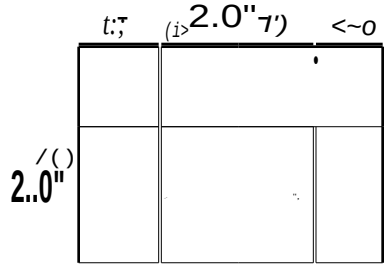


From: Borbrow, 1987. pp 299-300

OVERHEAD 12

Another type of measurement problem is word problems such as these (show OVERHEAD 12). There are two ways of working these problems. One is by drawing/ruling off the measurement and counting the square inches. Another way is through division and finding the area. An important thing to remember is that because the problem asks for square inches, they want perfect squares, so any remaining measures can be cut off or ignored.

Ov~he(ld I.I-



count squares (16)

What is the maximum number of pieces of birthday cake of the size of _5 square inches that can be cut from the cake above?

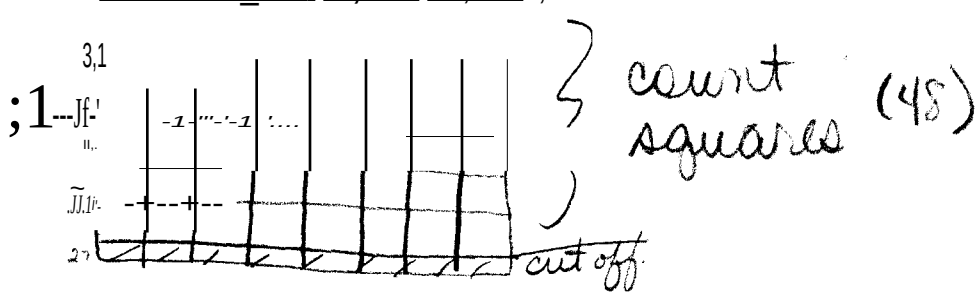
$5\overline{)20}$ 4 (length)

$5\overline{)20}$ 4 (width)

$4 \times 4 = 16$

How many 4 square inch tiles fit on a floor that is 27 iY\cl1e~ **long and** 32tn\l.hes **wide?**

3~



count squares (48)

or $4\overline{)27}$ 6 (width) $4\overline{)32}$ 8 (length) $4 \times 8 = 48$

24

3 will not make square inch tiles — (since remainder)

Overhead 1

MATH

IMPORTANT BASIC INFORMATION

A, Measurement

1 ft = 12 inches

1 yd = 3 ft = 36 inches

1 mile = 5280 ft = 1760 yds

B. Me.+'\c.s

km	hm	dam	m	dm	cm	mm
kg	hg	dag	g	dg	cg	mg
kl	hi	dal		dl	cl	ml
.001	.01	.1	1	10	100	1000
K_	h_	do._	(v\,\'1 +')	d-	c.__	f'f\ _

t, 1 meter is a little more than a yard (= a little more than 3 ft)

1 kilogram is about 2.2 lbs

1 liter is a little more than a quart

Overhead 2

Measurement

1. The length of a yardstick.
   a. 5m h. ~ c. lOam d. 1km

2. The weight of an average wanan.
   a. 60kg b. 6kg c. 60g d. 60m

3. The height of an average man.
   a)1.7km b)1.7mn c)1.7cm d)1.7m

4. A crayon was measured in mi 11imeters , the length expressed in centimeters would be
   a. one tenth as great
   h. one hundredth as great
   c. ten times as great
   d. one hundred times as great

k:..-_ h _ da___ ___ d _ c__ m _

Overhead 3

Math

More Basic Information

Area of a square or rectangle = L x W

Area of a triangle = 1/2 bh

Area of a parallelogram = b x h (same as L x W)

A straight line = 180·

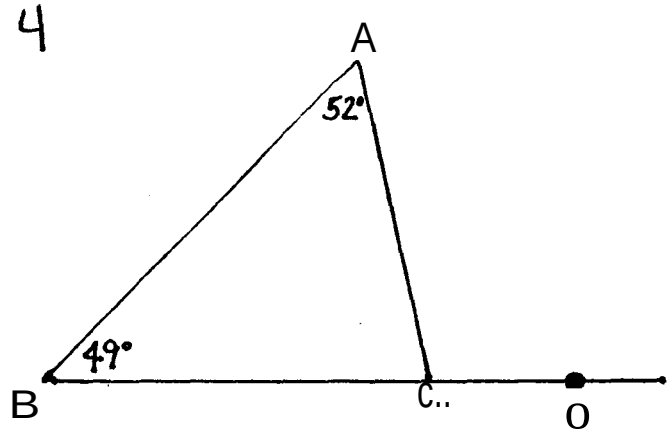
A triangle (inside) = 180·

A circle = 360·

Perimeter = add all of the sides

A prime number can only be divided by 1 and by itself

Overhead 4



What is the measure of ∠ACD?

Overhead 5

Percentages

20% of 30 means .20 x 30

- "of" means multiply

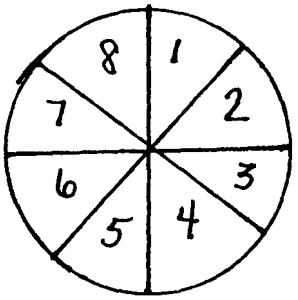
$$\frac{\text{is}}{\text{of}} \quad \frac{\text{wp}}{100}$$

Overhead 6

Thirty students are awarded scholarships to college, this number comprises of 40 % of the total number of students who applied. How many students applied for the scholarship?

Overhead 7

PROBABILITY



1. Using the ~ spaced spinner above, what is the probability of spinning a 4 or greater in one spin?

2. Using the spinner above, what is the probability of spinning either a 2 or a 5 in one spin?

Overhead 8

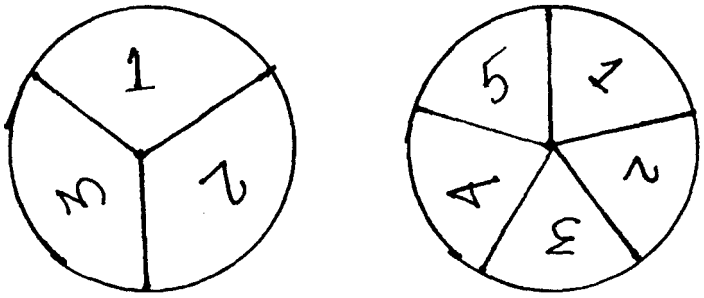
Probability

3. What is the probability of rolling two dice in one toss so that they total 7?

4. What is the probability of tossing tails four consecutive times with a two sided fair coin?

Overhead 9

Probability



5. What is the probability that each of the <u>equally</u> spaced spinners above will stop on a two on its first spin?

Ovvr\\.eud, t0

AGE

1. Clyde is four times as old as John. If the difference between their ages is 39 years, how old is Clyde?

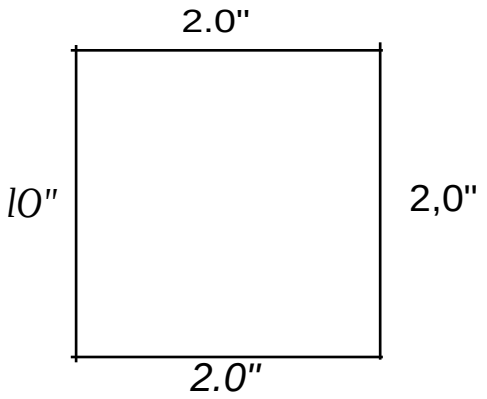
2. Matt is six years older than Hector. In two years Matt will be twice as old as Hector. How old is Hector now?

Overhead 11

Tom can mow Harry's lawn in exactly 3 hours. Bill can mow Harry's lawn in exactly 6 hours. If Harry hires Bill and Tom to work together using 2 lawn mowers, how fast can they mow the lawn?

Tom paints a house in 8 hours. Dick paints a house in 6 hours. Harry also paints a house in 6 hours. How long will it take for Tom, Dick, and Harry to paint the house together?

Overhead 12



What is the maximum number of pieces of birthday cake of the size of 5 square inches that can be cut from the. cake above?

How many 4 square inch tiles fit on a floor that is 27 in~heS long and 32 inches wide?

Skills Assessed in P.P.S.T. Math

Major Skill Area	Sequence of Skills	Example	Number of Problems
Whole Numbers	Place value		2
	Addition		1
	Subtraction	2-step problems	2
	Multiplication	2-step problems	2
	Division	2-step problems	2
Decimals	Place value		1
	Addition		3
	Multiplication	2-step problems	2
Fractions	Ordering		2
	Converting to decimals	2-step problems	1
	Addition	2-step problems	1
	Division	2-step problems	2
	Proportions		1
Percentages	Given percent		2
Geometry	Area		2
	Perimeter		1
Charts	Reading		5
Metrics	Comparing		2

Skills Assessed in P.P.S.T. Math

Major Skill Area	Sequence of Skills	Example	Number of Problems
Logic			5
Algebra	Basic operations	solving for x setting up formula	5
Extraneous info			
Multiple Steps	2-steps		5
Readability	8.5 sentences/134 syllables 6.0 sentences/135 syllables 7.6 sentences/131 syllables	5th grade 7th grade avg. 6th grade 5th grade time needed for each question = 1 min, 15 sec.	

Reading Skills

Skill	Number of Problems
Summarizing	5
Making Inferences	13
Finding the Main Idea	2
Finding Details	12

Average Readability Level: 10th grade

Time Needed to complete test: 1 min. per question

Language Skills

Skill	Examples	# of Problems
Spelling	all most instead of almost womens' instead of women's	2
Word Usage	and also instead of but also much instead of many do instead of are with instead of then excess wordage	1 3
Word Agreement	singular noun, singular verb neither/nor tense agreement adjective instead of "adverb double negatives "pronoun agreement	1 1
Modifiers '	verb modifying noun wrong noun modifying verb	4
Capitalization	nouns	2
Punctuation	comma usage	2
Complete Sentences	omission of verbs	6
(word omissions)	omission of articles beginning sentences with verbs beginning sentences with prepositions	

MATHEMATICS

Time-50 minutes

40 Questions .

Directions: Each of the questions or incomplete statements below is followed by five suggested answers or completions. Select the one that is best in each case and then fill in the corresponding lettered space on the answer sheet with a heavy, dark mark so that you cannot see the letter.

Remember, try to answer every question.

1. A model is to be made so that 1 centimeter ~ represents 20 meters. How long should the model be to represent 20,000 meters?

   (A) 1 em (B) 10 cm (C) 100 cm
   (D) 1,000 em (E) 10,000 cm

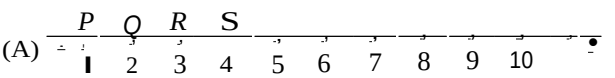
2. To completely cover the shelves in a kitchen cabinet, 18 feet 9 inches' of shelf paper is needed. There are 33 feet 6 inches of shelf paper in the roll to be used. How much paper will be left after covering the shelves?

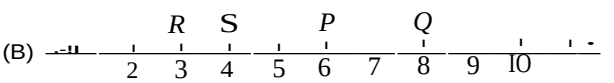
   (A) 14 ft 7 in
   (B) 14 ft 9 in
   (C) 15 ft 3 in
   (D) IS ft 7 in
   (E) IS ft 9 in

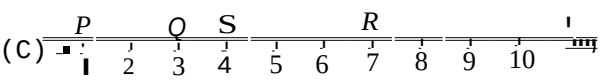
3. At a sale, Sam bought a coat at 20% off the regular price of $75. Which of the following is a way to determine the sale price of the coat?

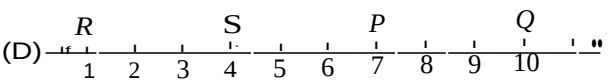
   (A) $75 - $20
   (B) 80% of $75
   (C) 20% of$75
   (D) $75 - (80% of $75)
   (E) (20% of $75) - $75

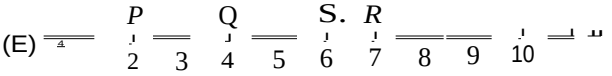
4. Points *P*, *Q*, *R*, and S are all on the same line. If *PS=4* and *QR* = 3, which number line represents a possible arrangement of the points?

   (A) 

   (B) 

   (C) 

   (D) 

   (E) 

GO ON TO THE NEXT PAGE.

5. Apples are priced at 16 cents each. or 3 for 42 cents. How much is saved per apple by buying 3 apples?

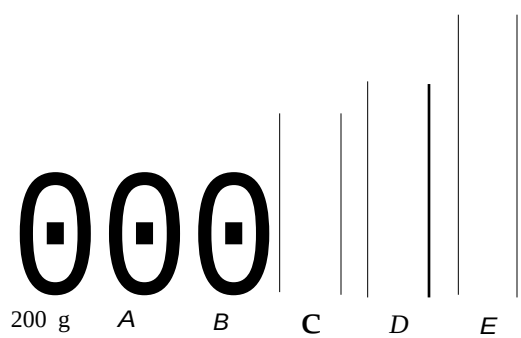
(A) 26¢
(B) 18¢
(C) 14¢
(D) 2¢
(E) 1e

6. A student claims that when two even numbers are added. the sum consists only of even digits. Which of the following shows that the student is NOT correct?

(A) 12 + 36 =48
(B) 21 + 36 = 57·
(C) 12+64=76<
(D) 21 + 64 = 85.
(E) 21 + 63 = 84

7. Which of the following has the greatest value?

(A) .9 + .2 + 1.5
(B) .9 X .2 X 1.5
(C) .9 + (.2 X 1.5)
(D) (.9 + .2) X 1.5
(E) (.9 X .~) + 1;5



8. In the figure above. if the first cylinder is to represent a weight of 200 grams. which of the others most likely represents 150 grams?

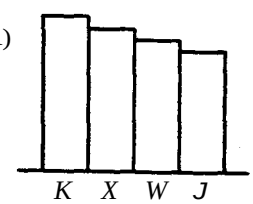
(A) A
(B) B
(C) C
(D) D
(E) E

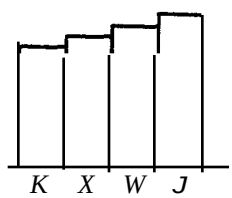
9. A sheet of paper measures 8 inches by 11 inches. What is the greatest number of 2-inch squares that can be ruled off on this sheet of paper?

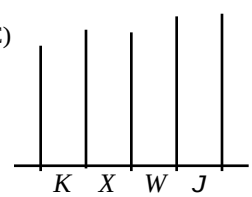
(A) 20 (B) 23 (C) 24 (D) 25 (E) 30

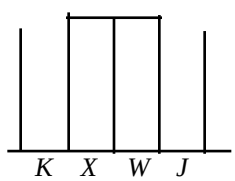
Car Model	Frequency
K	7
X	9
W	7
J	8

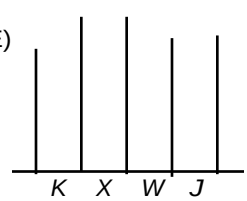
10. The chart above gives data about the distribution of four compact-car models in a company parking lot. Which of the following figures best represents the given data?

(A)


(B)


(C)


(D)


(E)


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11. $10^{1} + \frac{1}{1000^{-}}$

(A) 1.1
(B) 1.01
(C) 0.101
(O) 0.011
(E) 0.11

12. A study showed that on the average engineers earned 25% more per year than laboratory technicians. If this trend continues, the annual salary of engineers would be what percent greater than that of laboratory technicians after 5 years?

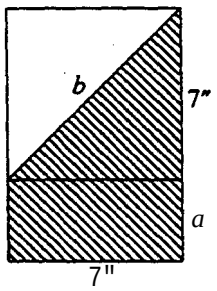
(A) 5% (B) 20% (C) 25%
(O) 30% (E) 125%

TEAMS

Best Yets	I	3	0
Heroes	I	5	2
Lions	2	3	5'
Optimists	023		
Perfectos	134		
	ABC	D	E

13. Each of five schools in a certain town has a ball team that plays teams from other towns. Although these teams do not play each other, they rank their teams by the number of games won. Joe said, "If the Perfectos win their next game, the Lions will be in second place." If Joe is right, which column above could show the number of games each team has won so far?

(A) *A* (B) *B* (C) C (0) *D* (E) *E*

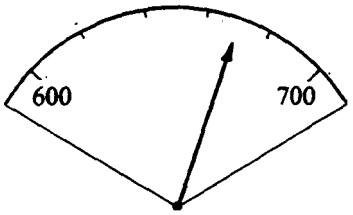


14. To find the area of the shaded portion of the figure above you need the value of

(A) *a* only
(B) *b* only
(C) both *a* and *b*
(O) either *a* or *b,* but not both
(E) neither *a* nor *b*

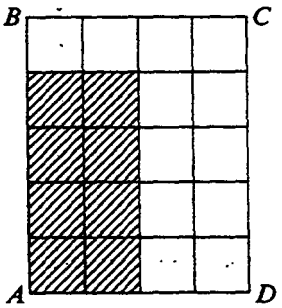
15. A club with 120 members has 80 female members. The ratio of females to males in the club is

(A) 1:3 (B) 1:2 (C) 2:1
(0) 2:3 (E) 3:2



16. On the scale above, the arrow points to

(A) $630\frac{1}{2}$
(B) 635
(C) $660\frac{1}{2}$
(O) 670
(E) 685



17. In the figure above, the shaded portion is what fraction of region *ABCD?*

(A) $\frac{8}{3}$
(B) $\frac{5}{2}$
(C) $\frac{5}{4}$
(O) ~
(E) ~

GO ON TO THE NEXT PAGE.

18. Which of the following is equal to a quarter of a million?

(A) .4O~000··

(B) 250,000

(C) 2,500,000

(D) 4;000,000

(E) 1;000;000

19. Which of the following could be the length of a car?

(A) 450 centimeters
(B) 150 millimeters
(C) 12 meters
(D) 1.5 decimeters
(E) 0.4 kilometers

A is 4 more than 3 times B

20. Which of the following is NOT a way to express the relationship above?

(A) $B=\frac{A-4}{3}$

(B) $A-3B=4$

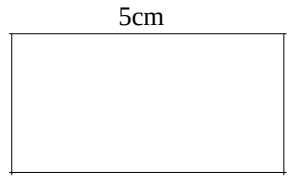
(C) $3B+4=A$

(D) $A-4=3B$

(E) $3B-4=A$

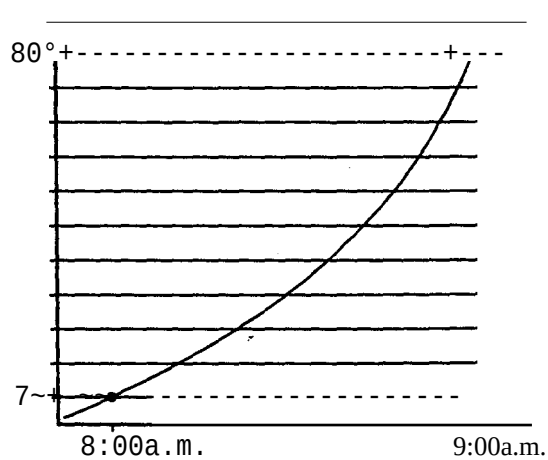
21. Each of five people earned one of the commissions shown below in one day. Which is greatest?

(A) .1% of $1,000
(B) 10% of $100
(C) 12.5% of $100
(D) 15% of $100
(E) 25% of $40



22. What is the perimeter, in centimeters, of the rectangle above?

(A) 7.5
(B) 12.5
(C) 15.0
(D) 25.0
(E) 30.0



23. According to the graph above, approximately what was the temperature at 8:20 a.m.?

(A) 72°
(B) 74°
(C) 75°
(D) 76°
(E) 78°

GO ON TO THE NEXT PAGE.

24. A committee of teachers is preparing a common examination for a certain course. Each member of the committee is assigned to write 3 to 5 arithmetic questions, 5 to 7 algebra questions, and 6 or 7 geometry questions. The minimum and maximum number of questions, respectively, that each teacher is to write are

(A) 3 and 7
(B) 3 and 33
(C) 8 and 13
(D) 14 and 19
(E) 14 and 33

25. 5.19 is between

(A) 5.0 and 5.3
(B) 5.08 and 5.10
(C) 5.7 and 6.0
(D) 5.00 and 5.02
(E) 5.015 and 5.127

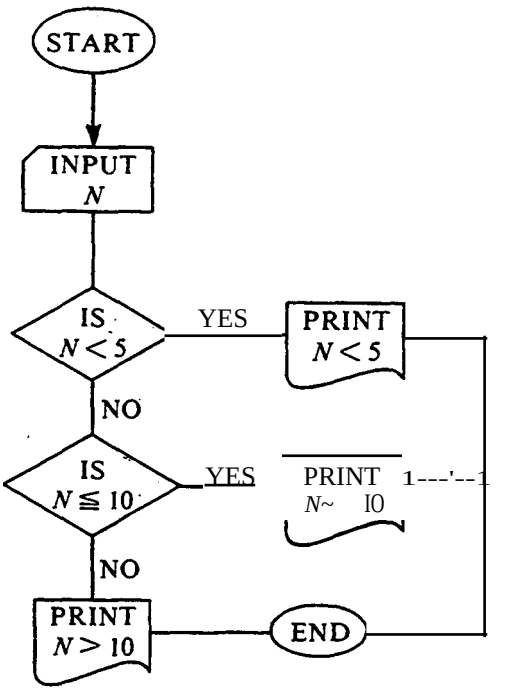
x	y
0	5
1	11
6	23
7	26
10	35

26. Which of the following formulas expresses the relationship between x and y in the table above?

(A) $y = x + 5$
(B) $y = x + 6$
(C) $y = 3x + 5$
(D) $y = 4x - 1$
(E) $y = 4x - 5$

27. It took Brenda 10 hours to drive from A to B when she averaged 50 miles per hour. Pulling a trailer on the return trip from B to A, she averaged 40 miles per hour. How many hours did the return trip take?

(A) 8
(B) 9
(C) $10\frac{1}{5}$
(D) 11
(E) $12\frac{1}{2}$



28. An unknown number, N, was put into the system shown above. Due to a printing malfunction, all that appeared on the printout was "N 10." Which of the following statements about N must be false?

(A) N could have been 8.325.
(B) N could have been 5.
(C) N could have been 6.10.
(D) N could have been 4.5.
(E) N could have been 16.

$(10^5)\ (10^4)\ (10^3)\ (10^2)\ (10^1)\ (10^0)$

29. All of the digits 1, 2, 3, 4, 5, and 6 are used to fill in a six-digit numeral in the display above. The digits 2 and 6 are in positions that are next to each other (adjacent). The digit 1 is in the 10^4 position. If the digits 2 and 4 are both in positions adjacent to the 1, which of the following need NOT be true?

(A) The number formed is greater than 400,000.
(B) The hundreds' digit is the 6.
(C) The digits 5 and 6 are in adjacent positions.
(D) The digits 3 and 5 are in adjacent positions.
(E) The number formed is an odd number.

GO ON TO THE NEXT PAGE.

Some values of x are less than 100·1

30. Which of the following is NOT consistent with the sentence above?

(A) 5 isnot a value of x.
(B) 95 is a value of x.
(C) Some values of x are greater than 100.
(D) A,ll-valuesof x are less than 100.
(E) No numbers less than 100 are values of x.

31. The length of a caterpillar was measured in centimeters. The length expressed in millimeters would be

(A) twice as great
(B) half-as great
(C) ten times as great
(D) one-tenth as great
(E) one-thousandth as.great

32. Which of the following fractions is least?

(A) $\frac{11}{10}$ (B) $\frac{99}{100}$ (C) $\frac{\sim\sim}{\sim\sim}$

(D) $\frac{3}{2}$ (E) $\frac{\sim\sim}{\sim\sim}$

33. For a certain board game, two dice are thrown to determine the number of spaces to move. One player throws the two dice and the same number comes up on each of the dice. What is the probability that the sum of the two numbers is 9 ?

(A) 0 (B) i (C) ~ (D)! (E)

34. If $P + 5 = Q$, then $P + 10 =$

(A) $I0Q$
(B) $2Q$
(C) $Q402$
(D) $Q40$ 10
(E) $Q40$ 20

35. When Larry was calculating the amount of material to purchase for a project, he accidentally divided by 2 when he should have multiplied by 2. The answer he got was 64. The correct answer should have been

(A) 16 (B) 32 (C) 96
(D) 128 (E) 256

36. If A, b, and h are positive numbers and $A = \frac{1}{2}bh$, then $h =$

(A) $!Ab$ (B) $\frac{A}{2b}$ (C) $\frac{1}{2Ab}$
(D) $\frac{2A}{b}$ (E) $\frac{f}{\ldots}$

37. A plane cross section of a cube can have any of the following shapes EXCEPT one. Which is it?

(A)
(B) 0
(C) D
(D) D
(E) O

38. If $0.0001 \times N = O.I$, then $N =$

(A) 10
(B) 100
(C) 1,000
(D) 10,000
(E) 100,000

39. M and N are any pair of real numbers whose product is 1,000. If one number is doubled and the product remains 1,000, what is the effect on the other number?

(AVThe-other number is also doubled.
-(B) ~The other number is one-half its original value.
(€1~The other number is increased by two.
-tf'} The other number is decreased by two.
...(Et-€hanging one number has no effect on the other.

GO ON TO THE NEXT PAGE.

WIND-CHILL CHART

Temp. (F)	Wind Speed (m.p.h.) 5	10	15	20	25	30	35	40
50°	48	40	36	32	30	28	27	26
40°	37	28	22	18	16	13	11	10
30°	27	16	9	4	0	-2	-4	-6
20°	16	4	-5	-10	-15	-18	-20	-21
10°	6	-9	-18	-25	-29	-:-33	-35	-37
0°	-5	-21	-36	-39	-44	-48	-49	-53
:710°	-15	-33'	. -45	-53	-59	-63	-67	-69
-20°	-26	-46	-58	-67	-74	-79	-82	-85
-30°	-36	-58	-72	-82	-88	-94	-98	-100
-40°	-47	-70	-85	-96	-104	-109	-113	-116
-50°	-57	-83	-99	-IIO	-118	-125	-129	-132

40. The temperature today is 10°F, but it feels as cold as it did last week when the temperature was -10° F and the wind speed was 10 miles per hour. According to the chart above, what is the wind speed today?

(A) 10 m.p.h.
(B) 15 m.p.h.
(C) 20 m.p.h.
(D) 25 m.p.h.
(E) 30 m.p.h.

S TOP

IF YOU FINISH BEFORE TIME IS CALLED, YOU MAY CHECK YOUR WORK ON THIS TEST.

MATHEMATICS TEST

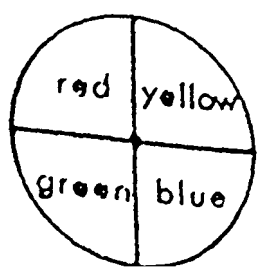
Time: 50 Minutes
"40 Questions

·DIRECTIONS

•. Each of the questions or inC()mplctoIIlat.ementsbelow is followed by five ~ suggested ans.wers or com~leljonll. HcJcc(the best answer or completion of the ,l' five choices given and fill m the COtrCllponding lettered space on the answer. _·sheet.

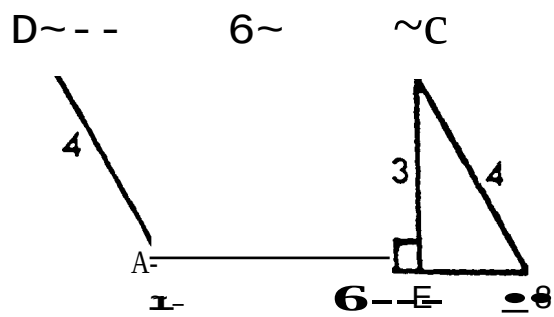
~:: 1. Which of the following fractlol/JI ıı (he largest'?

~t (A) 25/52 (O) 51/103
ff (B) 31/60 (E) 43/90
~~. (C) 19/40



2. From the diagram of t~c: Hpl,JIlt;r ub(Jve, in spinning the spinner only once, what is the probability of tpinning red, yellow, or blue'?
(A) V4 · (B) VJ (C) 1/'1 (lJ) '14(E) 3/2

3. If *16V2* feet equals 1 rod, how *IW,ny* Inches are there in 4 rods'?
(A) *5tj2* (B) 22 (e) (,(, *(D)* 792 (E) 2,376



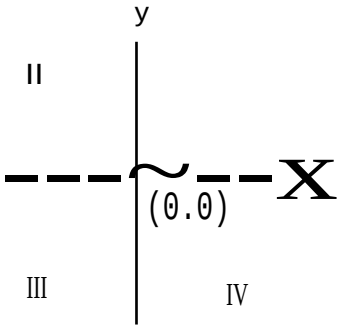
4. To compute the area of thlll figure, one would use
(A) *6x4* (O) 6+·3
(B) 12 x 3 (E) 4 x (6 + 3)
(C) 6 x 3

10. On a map, 1 centimeter represents 35 kilometers. Two cities 245 kilometers apart would be separated on the map by how many centimeters?
    (A) 5 (B) 7 (C) 9 (D) 210 (E) 280

11. Round off to the nearest tenth: 4,316.136
    (A) 4,320
    (B) 4,316.14
    (C) 4,316.13
    (D) 4,316.106
    (E) 4,316.1

12. Which of the following is a prime number?
    (A) 9 (B) 13 (C) 15 (D) 21 (E) 24

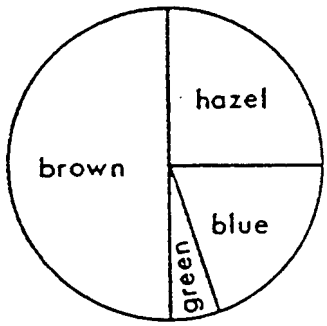
13. The fraction 1/8 is between the numbers listed in which of the following pairs?
    (A) 1/10 and 2/17
    (B) .1 and .12
    (C) .08 and.l
    (D) 1 and 2
    (E) 1/9 and 2/15



14. In the coordinate graph above, the point represented by (-3,4) would be found in which quadrant?
    (A) I
    (B) II,
    (C) III
    (D) IV
    (E) cannot be determined

15. A class. of 30 students all together have 60 pencils. Which of the following *must* be true?
    (A) Each student has 2 pencils.
    (B) Every student-has a pencil.
    (C) Some students have only 1 pencil.
    (D) Some students have more pencils than other students.
    (E) The class averages 2 pencils per student.

16. A man purchased 4 pounds of steak priced at $3.89 per pound. How much change did he receive from a twenty-dollar bill?
    (A) $4.34
    (B) $4.44
    (C) $4.46
    (D) $15.56
    (E) $44.66

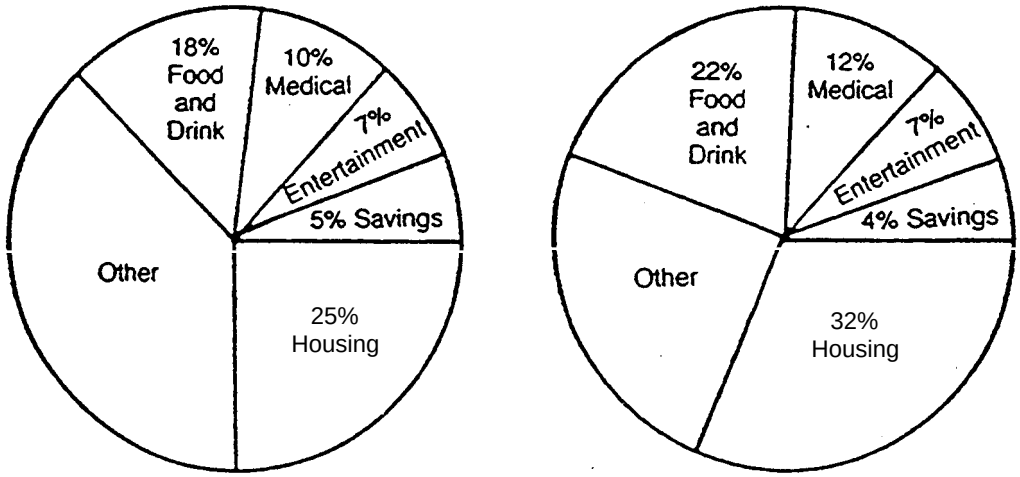


17. Sam tries to construct a pie graph representing eye color of his classmates. In his class of 24 students, 6 students have blue eyes, 12 students have brown eyes, 5 students have hazel eyes, and 1 student has green eyes. His teacher tells him that his graph (shown above) is not correct. In order to fix the graph, Sam should
    (A) increase the amount of green and decrease the amount of blue
    (B) increase the amount of blue and, decrease the amount of hazel
    (C) decrease the amount of blue and increase the .amount of brown
    (D) decrease the amount of hazel and increase the amount of brown
    (E) increase the amount of hazel and increase the amount of blue

18. If D is between A and B on $\overline{AB}$, which of the following must be true?
    (A) AD ••.DB
    (B) DB ..•AB - AD
    (C) AD -= AB + DB
    (D) DB -= AD + AB
    (E) AB -= AD -= BD

Questions 19 and 20 are based on the following graph.

AVERAGE FAMILY'S EXPENSES



1970
Average Income $12,000

1975
Average Income $16,000

19. How much more money did the average family spend on medical expenses in 1975 than in 1970?

(A) $500-$600
(B) $600-$700
(C) $700-$800
(D) $800-$900
(E) $900-$1,000

20. What was the approximate increase from 1970 to 1975 in the percentage spent on food and drink?

(A) 4% (B) 18% (C) 22% (D) 40% (E) 50%

21. In a senior class of 800, only 240 decide to attend the senior prom. What percentage of the senior class attended the senior prom?

(A) 8%
(B) 10%
(C) 30%
(D) 33%
(E) 80%

22. What is the probability of tossing a penny twice so that both times it lands heads up?

(A) 1/8 (B) 1/4 (C) 1/3 (D) 1/2 (E) 2/3

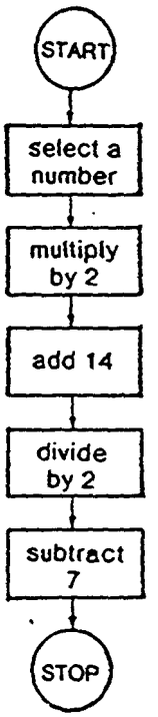
23.. 0074 is how many times smaller than 740,ooo?

(A) 1,000,000
(B) .10,000,000
(C) 100,000,000
(D) 1,000,000,000
(E) 10,000,000,000

24. A suit that originally sold for $120 is on sale for $90. What is the rate of discount?

(A) 20%
(B) 25%
(C) 30%
(D) 33Y3%
(E) 75%

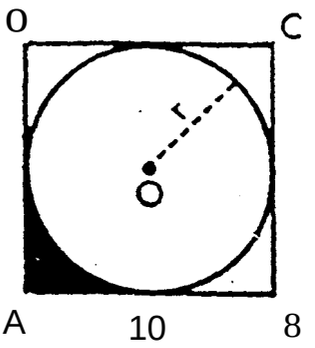
25. In this flow chart, regardless of the number you select, the number at the end is always



(A) 5
(B) less than 14
(C) the same as the original number.
(D) twice the original number
(E) an odd number

26. To cbange 3 miles to inches, you should

(A) multiply 3 times 5,280
(B) multiply 3 times 5,280 and then divide by 12
(C) multiply 3 times 5,280 and then multiply by 12
(D) divide 3 into 5,280 and then multiply by 12
(E) divide 3 into 12 and then multiply by 5,280



27. Circle 0 is inscribed in square ABeD as shown above. The area of the shaded region is approximately

(A) ,10 (B) 25 (C) 30 . (D) 50 (E) 75

28. Today is Lucy's fourteenth birthday. Last year she was three years older than twice Charlie's age at that time. Using C for Charlie's age now, which of the following can be used to determine Charlie's age now?

(A) 13 - 3 - 2(C - 1)
(B) 14 - 3 - 2C
(C) 13 - 3 - 2C
(D) 13 + 3 - 2C
(E) 13 + 3 - 2(C - 1)

29. Angela has nickels and dimes in her pocket, She has twice as many dimes as nickels. What is the best expression of the amount of money she has in cents if x equals the number of nickels she has?

(A) 25x
(B) 10x + 5(2x)
(C) x + 2x
(D) 5(3x)
(E) 20(x + 5)

30. Four construction workers build a house containing 16 rooms. If the house has 4 floors and they take exactly 4 months (without stopping) to buildit, then which of the following *must* be true?

I. They build 4 rooms each month.
II. Each floor has 4 rooms.
III. They build an average of 1 floor per month.
IV. The house averages 4 rooms per floor.

(A) I and II
(B) I, II, and III
(C) II and III
(D) III and IV
(E) I, II, III, and IV

31. 750 times 45 equals P. Therefore 750 times 44 equals

(A) P - 45
(B) P - 750
(C) P - 1
(D) 44P
(E) 750P

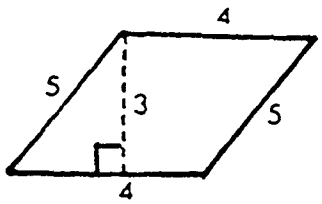
32. A square 4 inches on a side is cut up into smaller squares t inch on a side. What is the maximum number of such squares that can be formed?

(A) 4 (B) 8 (C) 16 (D) 36 (E) 64

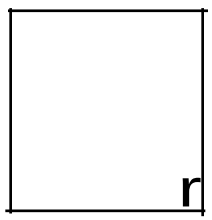
33. A color television set is marked down 20% to $320. Which of the following equations could be used to determine its original price,'P?

(A) $320 - .20 - P
(B) .20P - $320
(C) P - $320 + .20
(D) .80P + .20P - $320
(E) .80P - $320

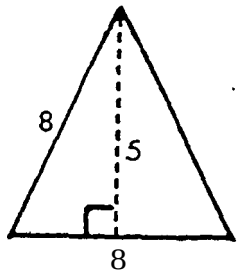
34. The areas of which of the following are equal?



I



II



III

(A) I and II
(B) I and III
(C) II and III
(D) I, II, and III
(E) none of them are equal

35. Which of the following is the most appropriate unit for describing the weight of a bowling ball?

(A) milligrams
(B) centigrams
(C) grams
(D) decagrams
(E) kilograms

Questions 36 *and* 37 *refer to the graph on the following page.*

36. Of the seven days shown, about what percent of the days did the maximum temperature exceed the average temperature?

(A) 3% (B) 4% (C) 43% (D) 57% (E) 93%

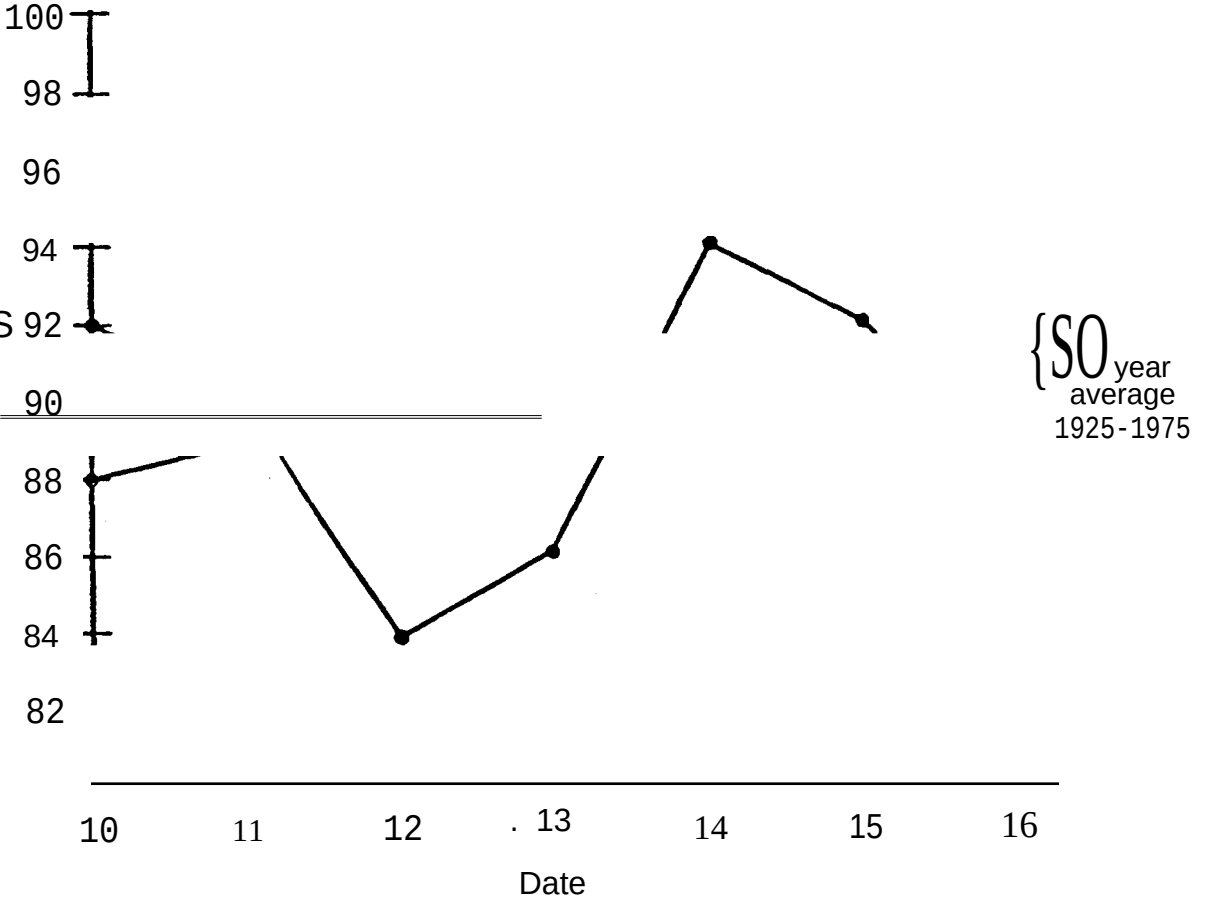
37. Between which two dates shown was the greatest increase in maximum temperature?

(A) July 11-12
(B) July 12-13
(C) July 13-14
(D) July 14-15
(E) July 15-16

38. When Francisco multiplies $(x + 1)(x + 2)$ he gets $x^2 + 3x + 2$ as an answer. One way to check this answer would be to

(A) divide $(x + 1)$ by $(x + 2)$
(B) divide $(x + 2)$ by $(x + 1)$
(C) plug in a positive integer for x
(D) square $(x + 1)$
(E) use reciprocals

Maximum Temperature Readings
Los Ange,les: Jury 10-16, 1979



39. How many paintings were displayed at the County Museum of Art if 30% 0f them were by Monet and Monet was represented by 24 paintings?
(A) 48 (B) SO (C) 60 (D) 76 (E) 80

The sum of two numbers equals one of the numbers.

40. If the above statement is true, which of the following best represents the relationship?
(A) x + s> Y + x
(B) (x)(y) - 1
(C) X-+- y-l
(D)x+y-y
(E) x+ y-x+ 1

~~ sroa IF YOU FINISH BEFORE TIME IS CALLED, CHECK YOUR WORK ON THIS SECTION ONLY .. DO NOT WORK ON ANY

P.P.S.T PBE.TE.S.T"" .W.O.RKSUO.P"".EY.AL.UA.T.IOH

Your Major: _____ Your Year in School: _____

Which session(s) did you attend? (Circle) **1** 2 3

How many time~ have you taken the PPST exam? 0 **1** 2 3

Which section(s) of the test are you re-taking?

Reading _ Writing __ Math

Please indicate the number of times you have tested for section:

Reading __ Writing __ Math

Please rate the following questions:
(l=not helpful, 2=somewhat helpful, 3=helpful, 4=very helpful)

How beneficial was the review session? **1** 2 3 4

Did you receive the help you needed? **1** 2 3 4

How helpful were the handouts? **1** 2 3 4

Was the presentation clear and concise? **1** 2 3 4

Overall, how would you rate the session? **1** 2 3 4

Please Comment:

1. What was most helpful about the session?

2. What was least helpful about the session?

3. What would you like to have seen done differently?

PPST Workshop sponsored by the College of Education, Office of Clinical Education and Student Support Program.

Office of Clinical Education GA 146 Phone 753-1972
Student Support Program GH 433 Phone 753-1729

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cross multiply 1 × 20000 = 20000
and divide GO~ 1000 -'? d

2. B 33 ft 6 in − 18 ft 9 in
32 18 in ← (12 in + 6 in)
33 ft 6 in
18 ft 9 in
8 ft 8 in → b

3. 8 getting 20% off → 100% − 20% = 8
− paying 80% of price
b
Or
Q) ~ ci0<t'<l '1CJ0 ~1 b) vlS .8 WOO "15 IS,o d) '15 X·8 I.90. ')'5 ~ IS e') IS- -~:£ IS I~ -io- -(00

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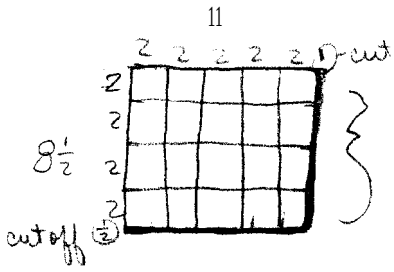
6. C the digit 7 in 72 is odd

1. A ct) ,S 1;} _11. S ';),to c) x, 2 1 18 × 1.5 .:»: ,2-10 \.20 c\) . C{ -t·L -1.-\ x q x2. liS I,GS

8. B

9. A



= 20

$2\overline{)18.5}$ 4, 8, 10, agree

$2\overline{)11}$ 5, 10, 1 left over

$4 \times 5 = 20$

10. E - look for two with the same length (eliminates a + b), look for the second bar being the highest! = e

11. L.

$\frac{1}{10} + \frac{1}{100} = \frac{10}{100} + \frac{1}{100} = \frac{11}{100}$ fastest method

or $\frac{1}{10} + \frac{1}{100} = \frac{11}{100}$

12. D

notice → average earned
→ trend continues
therefore average doesn't change

13. 11

14. A

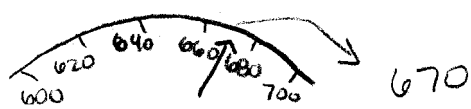
area of the triangle = $\frac{1}{2}bh$ → have that
area of the rectangle = lw → need l (a)

15. C

80: 10 :: ~: 1

80
10

16. D



17. E

shaded / total $= \frac{8}{20} = \frac{2}{5}$

18. B.

a quarter = $\frac{1}{4}$

$4\overline{)1,000,000}$ 250,000

19. A km hm dam m dm cm mm

a) 450 cm = 4.5 m b) 150 mm = .15 m (too small)

c) 12 m (too long) d) 1.5 dm = .15 m (too small) e) .4 km = 400 m (too long)

20. E A = 4 + 3B

a) A:.Y+36
A-4:: 4-1../-=38
A-Y=36
Ji:.i-:.38
3 3
{} • cJ S ti.rrrJL
~= (3

b) f:\:: <1+ 38
A_-36:: i..j.r3B-3B
A - 3 B -=. 4 sa..rn--Q....

C.) A ~ Lti' 36
3f.>+L\ ~ f\
:5~

d) A~l\+38
f1-'i~4-4 -:.38
f\ - L\ --='3 e <So,{il'JL

ej A-Yo:::3 e
F\-1..\.4.4 ~38;.4
A .~3e+'-\ ~U'lJ'j

Z.. \3.

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b') 10to ~ UJO -- -$ 20

c) (L.S~o &~00 ::$ 11. , S-

0\) lStt> 1/OJ ~ ,$ lS

e) 2S"% ~ '-/0 -:. r io

22. C fl~.h)J~ =:L'\-\J,J+L\-W - S+L.S"+S-;-L,~::: JS-

23. A 72°

&tA.~ ci~d~~."""";y..Jt

8A-v\. ~:2,o ;;;';'-/0 4'~

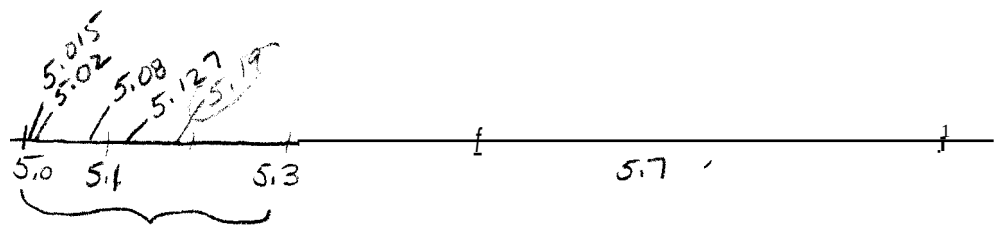
24. D

3-5
5-1
+-(;-1
ly-\q

J'("",,0..':1)•.•.

~-<..{j"yy..,

25. A



26. C

<1J 5'-::: 0+ 5') 1 (.3/~<+ 0

b) 6:~~~'-b

c') 5'~(3Xo) + S- \ 1\ ::(2.) (3) +S- ı '2.'3 : 3(<0") -rS"} 2..(0 ::(3X~)+S)

3S-::. ()1-1 0') -t0 S-

27. E.

A to B = 50 mph B to A = 40 mph 10 hrs / A to B

① find how many miles total 50 mph × 10 hrs = 500 miles

② find B to A $\frac{500}{40}$ = 12.5 hrs

d3.. D.

(Jr<JtvT$

N~N<5~N~/O~ N~.IO

or 1-,::> N >10

A)S, 5:25" (~) 5' cJ (p ɑ 0 cJ) ,/, S e) I&;

T~ T/iAA.Q 7/;"";'t£ r:A.La~ T~

d) N C£TV-L:j /}cG-f k ~,--+/'''' ''''

Y/v; p/~1d ~LCi cQ.a..ol N 10 ./-/ ~ for a printout

.~N ~ .MJL.Ii) ./1i..A..).7.4.,,,'- tJ.FO ".J

29. C

, '-I ı .::l. ~ 3 S

PWk.;.CLlLL.LG _.,tf.~ --L :2 JL. S :5

10^5 ı 10^3 10-:;).' /0' /0°

a) ~ b) 1::r...u..Q c)? d) -:.tr..-u..Q e) +~

C - ~.fL "!fJ .i:.JtQ pa.QjJ",JjZ~W

„ 5(:t/yu::j0 O-I~. 4a¸C-{/A..:J •• flUJUi flUl.i' b .f~

30. E.

c..) -fu..u 6) ;f;(~ <:) j;,UJJI e)~. e.) I~

e, '+ILl ~/flVI1 /OA<.jQ "~ ~'O 0 .

~ K vO-J'U ~<J WL£t.,ov 100 J e C-C't~,(!J6a

~a.:l :s.fa.:l:l/l·~)d

31. C km hm dam m dm cm mm

/uO 100 D

100 cm = 1000 mm 5 cm = 5 mm

r=: a..v CrYl.

3d. 8. Ct) b) %0 = Q'1 C) d) 1 i e') \=

b - '4--kOJl'v .L

33. A cLub'ld (/~-tk #, ~

~1:aJCtl/)\. (t-t~ ~ ~ ~~ #.

34. C ~ p~ S .:Q Pu./)..) f-:-Io::

1..:: Q p::: 5Q 1. ~ ~ - .Q ()/ Q ÷ 2

5 10 10 Z.

Or

F~10~f

/0 -;-5::: ~ 7J 10 -';10:: I

SO- S-:. / o 50+- 10 :.5'

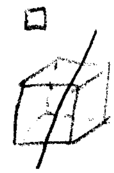
} can see that P ÷ 10 ⇒ Q ÷ 2

35. E $\frac{x}{2} = 64$ $\frac{x}{2} \times 2 = 64 \times 2$ $x = 64$, $\times 2$, 128

128 was the # started with 128 x 2 = 256

36. D ① $A = \frac{1}{2}bh$ ② $\frac{A}{\frac{1}{2}b} = \frac{\frac{1}{2}bh}{\frac{1}{2}b}$ ③ $\frac{A}{\frac{1}{2}b} = h$

④ $\frac{A\,(2)}{\frac{1}{2}b\,(2)} = h$ ⑤ $\frac{2A}{16} = h$ $h = \frac{2A}{B}$

31,. r; a.): 4n.' :: ;r bJ it 0 c)  d.  angle slice

e) - LLVr.:.t yc:1 CVv'- ~,~Qi~ .)Jj~UfI!.'
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39. B M x N :::: / 000 Lb ~ N\x t\) -. \ CX)O ~k~~ ..-
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1./01 , £

Today 10°F Wind ?
Last week -10°F Wind 10 mph → -33
find 10° - go across + find
-33 → go up → Wind = 30

MATHEMA TICS

Time-50 minutes

40 Questions .

Directions: Each of the questions or incomplete statements below is followed by five suggested answers or completions. Select the one that is best in each case and then fill in the corresponding lettered space on the answer sheet with a heavy, dark mark so that you cannot see the letter.

Remember, try to answer every question.

1. A model is to be made so that I centimeter represents 20 meters. How long should the model be to represent 20,000 meters?

   (A) I em (8) 10 em (C) 100 em
   (D) 1,000 em (E) 10,000 em

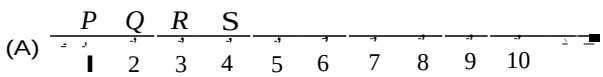
2. To completely cover the shelves in a kitchen cabinet, 18 feet 9 inches of shelf paper is needed. There are 33 feet 6 inches of shelf paper in the roll to be used. How much paper will be left after covering the shelves?

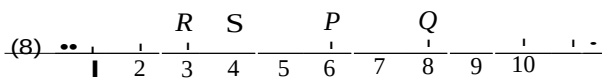
   (A) 14 ft 7 in
   (B) 14 ft 9 in
   (C) 15 ft 3 in
   (D) 15 ft 7 in
   (E) 15 ft 9 in

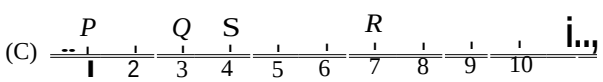
3. At a sale, Sam bought a coat at 20% off the regular price of $75. Which of the following is a way to determine the sale price of the coat?

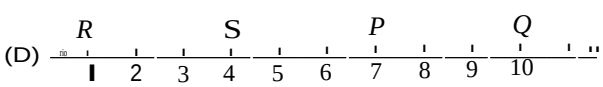
   (A) $75 - $20
   (B) 80% of $75
   (C) 20% of $75
   (D) $75 - (80% of $75)
   (E) (20% of $75) - $75

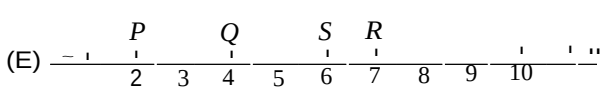
4. Points P, Q, R, and S are all on the same line. If $PS=4$ and $QR = 3$, which number line represents a possible arrangement of the points?

   (A) 

   (8) 

   (C) 

   (D) 

   (E) 

GO ON TO THE NEXT PAGE

5. Apples are priced at 16 cents each, or 3 for 42 cents. How much is saved per apple by buying 3 apples?

(A) 26~
(B) 18~
(C) 14~
(D) 2~
(E) I~

6. A student claims that when two even numbers are added, the sum consists only of even digits. Which of the following shows that the student is NOT correct?

(A) 12 + 36 = 48
(B) 21 + 36 = 57
(C) 12 + 64 = 76
(D) 21 + 64 = 85.
(E) 21 + 63 = 84

7. Which of the following has the greatest value?

(A) .9 +.2 + 1.5
(B) .9 x .2 x 1.5
(C) .9 + (.2 x 1.5)
(D) (.9 + .2) x 1.5
(E) (.9 x .2) + L5

8. In the figure above, if the first cylinder is to represent a weight of 200 grams, which of the others most likely represents 150 grams?

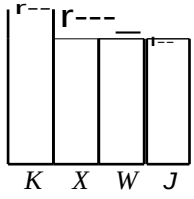
(A) A
(B) B
(C) C
(D) D
(E) E

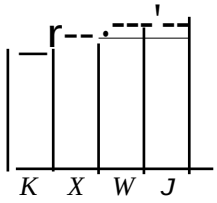
9. A sheet of paper measures 8! inches by 11 inches. What is the greatest number of 2-~nch squares that can be ruled off on this sheet of paper?

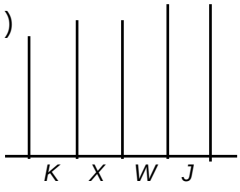
(A) 20 (B) 23 (C) 24 (D) 25 (E) 30

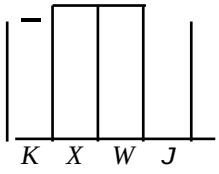
Car Model	Frequency
K	7
X	9
W	7
J	8

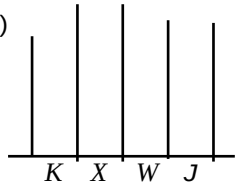
10. The chart above gives data about the distribution of four compact-car models in a company parking lot. Which of the following figures best represents the given data?

(A)


(B)


(C)


(D)


(E)


GO ON TO THE NEXT PAGE.

11. $\frac{1}{10} + \frac{1}{1000} =$

(A) 1.1
(B) 1.01
(C) 0.101
(O) 0.011
(E) 0.11

12. A study showed that on the average engineers earned 25% more per year than laboratory technicians. If this trend continues, the annual salary of engineers would be what percent greater than that of laboratory technicians after 5 years?

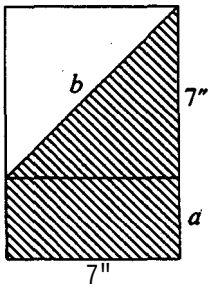
(A) 5% (B) 20% (C) 25%
(O) 30% (E) 125%

TEAMS

Best Vets	14330				
Heroes	11512				
Lions	2	2	3	4<	5"
Optimists	0	1	223		
Perfectos	12344				
	ABC			*D*	*E*

13. Each of five schools in a certain town has a ball team that plays teams from other towns. Although these teams do not play each other, they rank their teams by the number of games won. Joe said, "If the Perfectos win their next game, the Lions will be in second place." If Joe is right, which column above could show the number of games each team has won so far?

(A) *A* (B) *B* (C) C (0) *D* (E) *E*

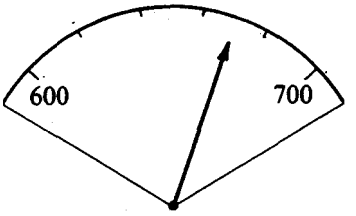


14. To find the area of the shaded portion of the figure above you need the value of

(A) *a* only·
(B) *b* only
(C) both *a* and *b*
(O) either *a* or *b*, but not both
(E) neither *a* nor *b*

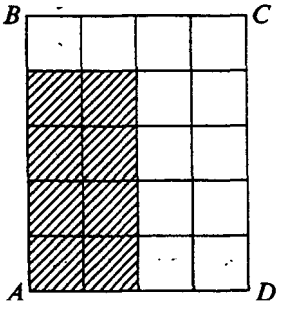
15. A club with 120 members has 80 female members. The ratio of females to males in the club is

(A) 1:3 (B) 1:2 (C) 2:1
(O) 2:3 (E) 3:2



16. On the scale above, the arrow points to

(A) $630\frac{1}{2}$
(B) 635
(C) $660\frac{1}{2}$
(O) 670
(E) 685



17. In the figure above, the shaded portion is what fraction of region *ABCD?*

(A) $\frac{8}{3}$
(B) $\frac{5}{2}$
(C) $\frac{5}{4}$
(O) j
(E) ~

GO ON TO THE NEXT PAGE.

18. Which of the following is equal to a quarter of a million?

(A) 40;000·-

(B) 250,000

(C) 2,500,000

(D) 4,000,000

(E) 1^{4};000:000

19. Which of the following could be the length of a car?

(A) 450 centimeters
(B) 150 millimeters
(C) 12 meters
(D) 1.5 decimeters
(E) 0.4 kilometers

A is 4 more than 3 times B.

20. Which of the following is NOT a way to express the relationship above?

(A) $B = \frac{A-4}{3}$

(B) $A - 3B = 4$

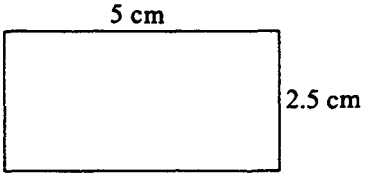
(C) $3B + 4 = A$

(D) $A - 4 = 3B$

(E) $3B - 4 = A$

21. Each of five people earned one of the commissions shown below in one day. Which is greatest?

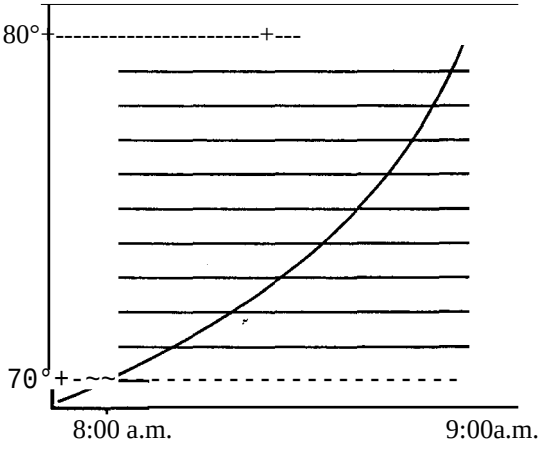
(A) _1% ofSl,OOO
(B) 10% of $200
(C) 12.5% of $100
(D) 15% of $100
(E) 25% of $40



22. What is the perimeter, in centimeters, of the rectangle above?

(A) 7.5
(B) 12.5
(C) 15.0
(D) 25.0
(E) 30.0

TEMPERATURE RECORD



23. According to the graph above, approximately what was the temperature at 8:20 a.m.?

(A) 72°
(B) 74°
(C) 75°
(D) 76°
(E) 78°

GO ON TO THE NEXT PAGE.

4 A committee of teachers is preparing a common
2 . examination for a certain course. Each member of the committee is assigned to write 3 to 5 arithmetic questions, 5 to 7 algebra questions, and 6 or 7 geometry questions. The minimum and maximum number of questions, respectively, that each teacher is to write are

(A) 3 and 7
(B) 3 and 33
(C) 8 and 13
(O) 14 and 19
(E) 14 and 33

25. 5.19 is between

(A) 5.0 and 5.3
(B) 5.08 and 5.10
(C) 5.7 and 6.0
(O) 5.00 and 5.02
(E) 5.015and5.127

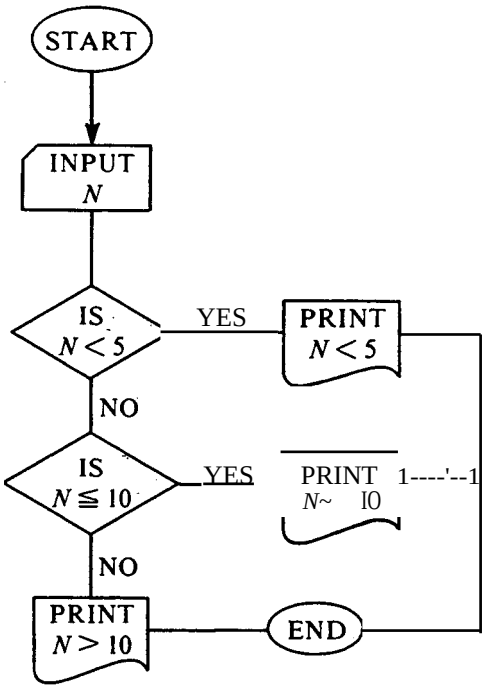
x	y
0	5
2	11
6	23
7	26
10	35

26. Which of the following formulas expresses the relationship between x and y in the table above?

(A) $y=x+5$
(B) $y=x+6$
(C) $y=3x+5$
(O) $y=4x-1$
(E) $y=4x-5$

27. It took Brenda 10 hours to drive from A to B when she averaged 50 miles per hour. Pulling a trailer on the return trip from B to A, she averaged 40 miles per hour. How many hours did the return trip take?

(A) 8
(B) 9
(C) $10\frac{4}{5}$
(D) 11
(E) $12\frac{1}{2}$



28. An unknown number, N, was put into the system shown above. Due to a printing malfunction, all that appeared on the printout was "N 10." Which of the following statements about N must be false?

(A) N could have been 8.325.
(B) N could have been 5.
(C) N could have been 6.10.
(D) N could have been 4.5...
(E) N could have been 16.

(10^5) (10^4) (10^3) (10^2) (10^1) (10^0)

29. All of the digits 1,2,3,4,5, and 6 are used to fill in a six-digit numeral in the display above. The digits 2 and 6 are in positions that are next to each other (adjacent). The digit I is in the 10^4 position. If the digits 2 and 4 are both in positions adjacent to the I, which of the following need NOT be true?

(A) The number formed is greater than 400,000.
(B) The hundreds' digit is the 6.
(C) The digits 5 and 6 are in adjacent positions.
(D) The digits 3 and 5 are in adjacent positions.
(E) The number formed is an odd number.

GO ON TO THE NEXT PAGE.

Some values of x are less than 100.

30. Which of the following is NOT consistent with the sentence above?

(A) 5 is not a value of x.
(B) 95 is a value of x.
(C) Some values of x are greater than 100.
(0) A,U'valuesof x are less than 100.
(E) No numbers less than 100 are values of x.

31. The length of a caterpillar was measured in centimeters. The length expressed in millimeters would be

(A) twice as great
-(B). half-as great
(C) ten times as great
(0) one-tenth as great
(E) one-thousandth as great

32. Which of the following fractions is least?

(A) $\frac{11}{10}$ (B) $\frac{99}{100}$ (C) $\frac{}{}$

(D) $\frac{3}{2}$ (E) $\frac{501}{500}$

33. For a certain board game, two dice are thrown to determine the number of spaces to move. One player throws the two dice and the same number comes up on each of the dice. What is the probability that the sum of the two numbers is 9 ?

(A) 0 (B) (C) ~ (O)! (E)

34. If P -+ 5 = Q, then P -+ 10 =

(A) 10Q
(B) $2Q$
(C) Q-+ 2
(O) Q-+ 10
(E) Q -+ 20

35. When Larry was calculating the amount of material to purchase for a project, he accidentally divided by 2 when he should have multiplied by 2. The answer he got was 64. The correct answer should have been

(A) 16 (B) 32 (C) 96
(0) 128 (E) 256

36. If A, b, and h are positive numbers and $A = \frac{1}{2}bh$, then $h =$

(A) $!Ab$ (B) $\frac{A}{2b}$ (C) $\frac{1}{2Ab}$

(0) $\frac{2A}{b}$ (E) $\frac{}{}$

37. A plane cross section of a cube can have any of the following shapes EXCEPT one. Which is it?

(A)
(B)
(C)
(O)
(E)

38. If 0.0001 X N= 0.1, then N=

(A) 10
(B) 100
(C) 1,000
(O) 10,000
(E) 100,000

39. M and N are any pair of real numbers whose product is 1,000. If one number is doubled and the product remains 1,000, what is the effect on the other number?

(AVThe-other number is also doubled.
'(8) ~The other number is one-half its original value.
(€t.-:-:=rhe other number is increased by two.
-{I)f The other number is decreased by two.
~hanging one number has no effect on the other.

GO ON TO THE NEXT PAGE.

WIND-CHILL CHART

Temp. (F)	Wind Speed (m.p.h.) 5	10	15	20	25	30	35	40
50°	48	40	36	32	30	28	27	26
40°	37	28	22	18	16	13	II	10
30°	27	16	9	4	0	-2	-4	-6
20°	16	4	-5	-10	-15	-18	-20	-21
10°	6	-9	-18	-25	-29	-33	-35	-37
0°	-5	-21	-36	-39	-44	-48	-49	-53
:710°	-15	-33	-45	-53	-59	-63	-67	-69
-20°	-26	-46	-58	-67	-74	-79	-82	-85
-30°	-36	-58	-72	-82	-88	-94	-98	-100
-40°	-47	-70	-85	-96	-104	-109	-1I3	-Il6
-50°	-57	-83	-99	-IIO	-1I8	-125	-129	-132

40. The temperature today is 10°F, but it feels as cold as it did last week when the temperature was - 10°F and the wind speed was 10 miles per hour. According to the chart above, what is the wind speed today?

(A) 10 m.p.h.
(B) 15 m.p.h.
(C) 20 m.p.h.
(D) 25 m.p.h.
(E) 30 m.p.h.

S TOP

IF YOU FINISH BEFORE TIME IS CALLED, YOU MAY CHECK YOUR WORK ON THIS TEST.

Answer Key

Cliffs Test 2

J.. !3   u) , ,5 l   h) , ~8   C) , ~-l   d , LJ   ') , Lf8

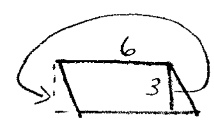
b vrL~   a/tL<LW'(./!   ~,L~/l   Y-A,JJ, , ., .-I~

2. D   # if c/ca: lL~L~   z: /lui.::V,ii-!!.!!~   tl=(- 3

1 t7f1f1j d:it.f}u:b.f&:J   /.{,.d, '.. .,o.   · f1..t.C1   '-|

s.D   1 rod = 16.5 ft   66
4 rods = 16.5 ft   ×12
× 4   132
660 feet   66
792 inches

4. C   area of a parallelogram = b × h
area = 6 × 3



5. B   a) = $\frac{1}{4}$ b) = $\frac{3}{8}$ ( )   d) $\frac{1}{4}$ e) $\frac{1}{4}$ (reduce)

6. B   a) Chicago housing − Indianapolis house   difference
b) month 1 \$ + month 2 \$ = total
c) (month 1 \$ + month 2 \$) = average

d~   X − 824.5 = 435
e)   435 × 825.5 = total
~b   \A 0 . . . addition che

1t.A   a straight line = 180° therefore   n (£Jib'l
□ = 180 − 84
□ = 96
The interior angles = 180°
q l0 + C.Dy~\ '1 [] '. I
(S'9 + [J ::[80
-151
II   -l

8. E a) $3.75 × 8 = total ($30)

b) $110 ÷ 24 = $ per hr

c) Mary's total ($110) - Juan's total ($30) = $80 (difference)

d) $\frac{\$110 + \$30}{2} = \$70$

e) need to know how many days she worked in order to find how many hrs she worked (on average) each day

9. C $3c = d$ $\frac{3c}{3} = \frac{d}{3}$ $c = \frac{d}{3}$

10. B (y\,()~: I .S, cross multiply [x d 4S"::;)<i~-~~~S:::.3S-x

Q(l9\t~ 3<; Z<iS" and divide -.!:1

35 I;}.I.I;;:

11. E. ~Ji;f-J" t/2;J(0,131.0

L> _""-""<""~<...J #A./il 6 "Q.() ./-'"Ou ..Ad o/..tJh;;;IJ» •••..

</3/0 , ,

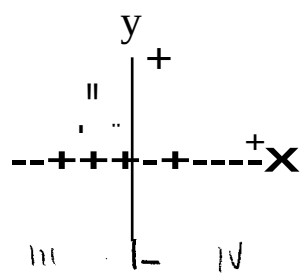
12. B a fY;u,~ # ca»: ~ ~ ~ ~ J- <|-trJ:Ld.j

13. E0 8 =.. , IZ. b ci) It ~., i=i ~ , IL e) ~ =. II 2- IS-::' , 13

,.t,\.,.,SI

0 .1' I Z.

14. B (-3,4) (x, y)



/5. E

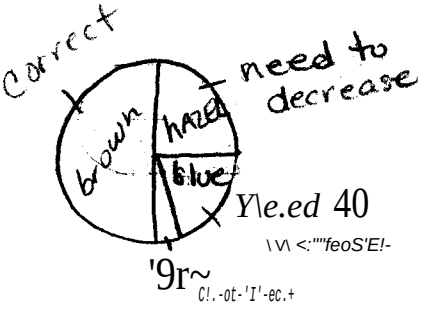
a. /lfWfJ-ht l~ b, J'~'J~ f,uJ.~ c) ~ h~/LLti
d, JJ}!.>~ k lv.At ~) ~ ~ IA 2 N.o E /h~- k

tto, S .t 3.80, '2..0.00
X: 4 -,5.5b
/S.5&; ti"J..j.4LJ

11.. f3

① (24)

② 6/24 = 1/4 = blue — 1/4
③ 12/24 = 1/2 = brown - 1/2
④ 5/24 = 5/24 = hazel - little less than 1/4
⑤ 1/24 = 1/24 = green -



Y\e.ed 40
\ V\ <:""feoS'E!-
'9r~ C!.-ot-'I'-ec.+

18. B

B

t\) --_ .•--,-,-' --- ~ ~ +UASl ~ D ~ .~)'"
\0,) ..(1..:1 / 1 /1 ..---- +UAJL
~ ----------+----- ~~~
d) __ -1+ - ~~
e) ----- ___ - _ _____ false

19. C

① in 1970 4'12-000)(-! 12.00 Q) .-, \'1\ S $1 (rJ000 11"2.. 3'2 oro .1",°'2o 1920.00 &; ~l~/'\"u~O ~-lhtlq2..0 - IL.-OO (LO

6U), A. \qlO - (S?0
{q 1s-- 22ro >~-'-I%

sic A ¥ -';> 240 ~X C/1.fJO(j I"i"<\.~~ 1.~O)((00 ':. 24000
&f 100 800 lao 800x::: G<..ipOO
cM..r~ 30,
800): :;2.(jCX;:.o 8CD ¸ c}1000
80:.·)

22. B more than one event so multiply outcome

event: (1) (2)

(H) (H)

T T

$\frac{\#\text{ of chances}}{\#\text{ of opportunities}}$: ' X' $\frac{L}{Z,}$ $\frac{|}{<.f}$

23. .0074 → 740000

.0074 | 10000 0000 / 740000 0000

.0074 0000 = 100,000,000

1 2 3 4 5 6 7 8

24. B CD 4JYYUY~ ~I.U't\.1\) SK. ~%g~~~

4' 120 = 'to 30

~ Of;. '-4)f 10Q - 30 X IdlJ IDf)

cross multiply 100)(S0 ::.3000

X • rz,0 -;.. 11.„.0"::

I""LOx ';. .30010

and divide

$\frac{120x}{120} = \frac{3000}{120}$ 120 | 3000 (25) 240 600 → 25%

25. C Choose #'s: 1: 4 x 2 = 8 + 14 = 22 ÷ 2 = 11 - 7 = 4

2: 15 x 2 = 30 + 14 = 44 ÷ 2 = 22 - 7 = 15

26. C 1 mile = 5280 ft 1 ft = 12 in

3 miles x 5280 ft x 12 in = _____ in

27. A OJ\~ e6 #~~~~~ (b x h\ ::,0~10:: \ 00

..L..tM ~ 4 -<.>O.O.AAdU/ ,OAJ /~O ==;2 J

– a .UJ -tAl 11")'~ o-;·x.iJ~u.}·e;+. Y-!utLlll d 5-'

v \."

\if~~~~vr}

28. t1 L::: I~ L--\ = 3 ~ 2. (c - \')

I Y - I-=-3 + 2 (c - \)

13 -- 3+2-((-))

I '3 - 3 :- 3 - :? + 2, Cc - I)

13-3 = 3 + "2 Cc - ") ~ A

29., ft ~, tJ~71R.A

Si /0 ¢

X~ --fw..i.cJ ttL.! /IIt.CU~'~ en dx

5x C;Zx OO¢):: du x

5x: 1- 20x -= 2.5x

30,,0 IlD f'Jj(5Y'/Uj w lif rtIfvv "'l.j ,"'vcr ,.::l..Ju,

A') JYY~ lrt 4;.,L 6~ '/yy~!~J.;.e i·\~.Q...

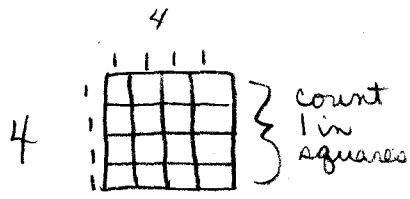
c\ JYY~ \..,t -\-uJ.JJ d) +UJJ1 e) .fw-;-~. +~),A...tL

,31, ~ 750 x 45 = P This is 45 groups of 750

44 x 750 is one less group of 750 therefore

(750 x 45) - 750 = P - 750

32 C



= 16 or 4 | 4 (length) 4 | 4 (width)

4 x 4 = 16

33. E 100% - 20% = 80%

80% of the original price = $320

.80P = $320

3~,. E

I parallelogram $A = b \cdot h = 4 \times 3 = 12$
II square $A = L \times W = 4 \times 4 = 16$
III triangle $A = \frac{1}{2} b \cdot h = (\frac{1}{2}) 8 \cdot 5 = 20$

3[£

a kilogram equals 2.2 lbs
- all other answers are less than one pound

30. D

~ .:::"Je ~ j:- X C.tv:y~~. Lt7- 100 :: l/00
o~:: reo r 100 -, • X "l- lx

IX :: 400

t.lfA.d civlgi:l..ll

Z1X:: L[00 7 Jlt/foJ·I ~ 5710
;r 1 J~.

37. C

- A{,~ 13 - 1 Y . J1~\..ULQ~ WCLO 8o
- ~~ Y1v l:l- 13 ~~/}Lc...JLfLLUJ.I... W-a..0 ~ o
- a-U ~t ~ =r-« dJu:J~

38. C

- i/»: ~~ ~ ~. US~ ~·o ~~~~
~ wtrLk \;0 -\'0 ~~ v~t>J ~()-£ lJ~V::U

39. E

J2... ~.f -? 2≤f z: ~Q ~ A)~ 2<-l x JDO =2 .1/00
of lot) X 100 30 'y :: 3()X

30x :: 2 'foa

~ d»vic1.D

36 X z 2-40Q 30 12..l{gg
~ ., 30

¥()••D

X + Y = Y
or X + Y = X

MATHEMATICS TEST

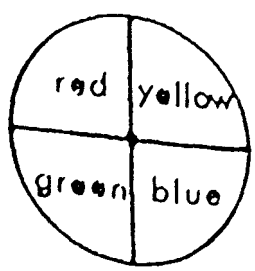
Time: 50 Minutes
40 Questions

DIRECTIONS

Each of the questions or incompleto IItutements below is followed by five suggested answers or com~IetionJi. HelC(;tthe best answer or completion of the five choices given and fill in the <:orrcllP{)nding lettered space on the answer ~:sheet.

1. Which of the following [Tactlo"" ıı the largest?

(A) 25/52
(B) 31/60
(C) 19/40
(D) 51/103
(E) 43/90

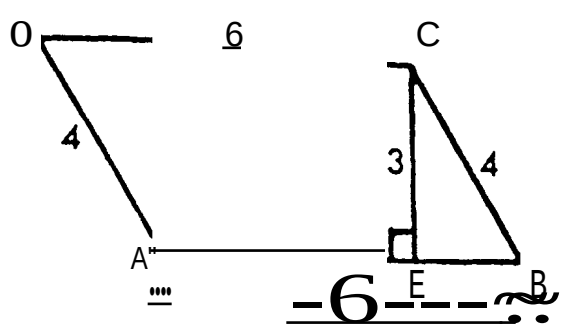


2. From the diagram of t~~ Hpl1JfJt:.r ubove, in spinning the spinner only once, what is the probability of 1I~~~g red, yellow, or blue?

(A) 14 (B) 13 (e) '/~ (2M y~ (E) $3/_2$

3. If 16'/, feet equals 1 rod, how",,, ny ~ are there in 4 rods ~

(A) 512 (B) 22 (C) ('{J ~ 792 (E) 2,376

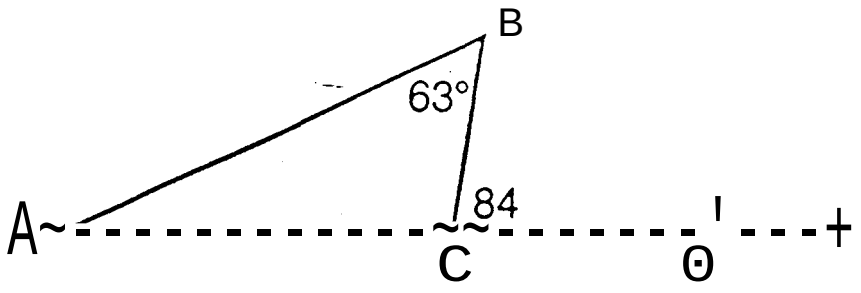


4. To compute the area of thlH figure, one would use

(A) 6 x 4
12 x 3
~6X3
(D) 6 +'3
(E) 4 x (6 + 3)

5. All of the following ratios are equal *except*
   (A) 1 to 4
   ~ 3 to 8
   (C) 2 to 8
   (D) 3 to 12
   (E) 4 to 16

6. Which of the following could be expressed by the following number sentence? 825.50 + '435.00 - 1,260.50
   (A) the difference in the cost of housing in two cities, Chicago and Indianapolis
   ~ the total amo~nt of money earned in each of two months during the summer vacation
   (C) the average of two months' earnings
   (D) 435.00 is the result of subtracting the weight of 824.50 pounds minus some unknown
   (E) the total of funding received by a school district of 435 students at $825.50 per student



7. Given ~ABC with *LBCD* •••84° and *LB* ""63°, find the measure of ∠A in degrees.
   & 21 (B) 27 (C) 84- (D) 96 116

8. If Juan works 8 hours and receives $3.75 perhour and . ary works 24 hours and receives a total of $110, which of the follo ing *cannot* be derived from the above statement?
   (A) Juan's total
   (B) Mary's wage per hour
   (C) the difference received between Juan and Mary
   (D) the average total received by Juan and Mary
   @ the hours Mary worked each day.

9. If3c - d, then c «
   (A) 3 + d
   (~~~d
   ~!/1/3
   (D) 1/3d
   (E) (1 + ·d)/3

10. On a map, 1 centimeter represents 35 kilometers. Two cities 245 kilometers apart would be separated on the map by how many centimeters?

(A) 5 (B) 7 (C) 9 (D) 210 (E) 280

11. Round off to the nearest tenth: 4,316.136

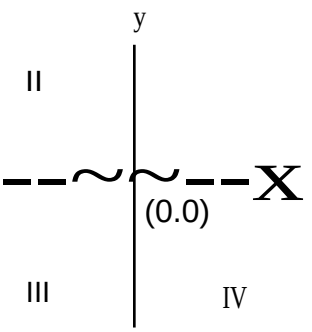
(A) 4,320
(B) 4,316.14
(C) 4,316.13
(D) 4,316.106
(E) 4,316.1

12. Which of the following is a prime number?

(A) 9 (B) 13 (C) 15 (D) 21 (E) 24

13. The fraction 1/8 is between the numbers listed in which of the following pairs?

(A) 1/10 and 2/17
(B) .1 and .12
(C) .08 and .1
(D) 1 and 2
(E) 1/9 and 2/15

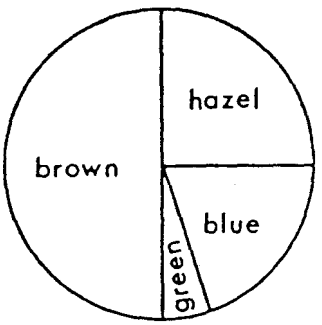


14. In the coordinate graph above, the point represented by (-3,4) would be found in which quadrant?

(A) I
(B) II.
(C) III
(D) IV
(E) cannot be determined

15. A class of 30 students all together have 60 pencils. Which of the following *must* be true?
    (A) Each student has 2 pencils.
    (B) Every studenthas a pencil.
    (C) Somestudents have only 1 pencil.
    ~" Some students have more .pencilsthan other students.
    ((E.)) The class averages 2 pencils per student.

16. A man purchased 4 pounds of steak priced at $3.89 per pound. How'::(' much change did he receive from a twenty-dollar bill?
    ~ $4.34
    CaW $4.44
    (C) $4.46
    (D) $15.56
    (E) $44.66

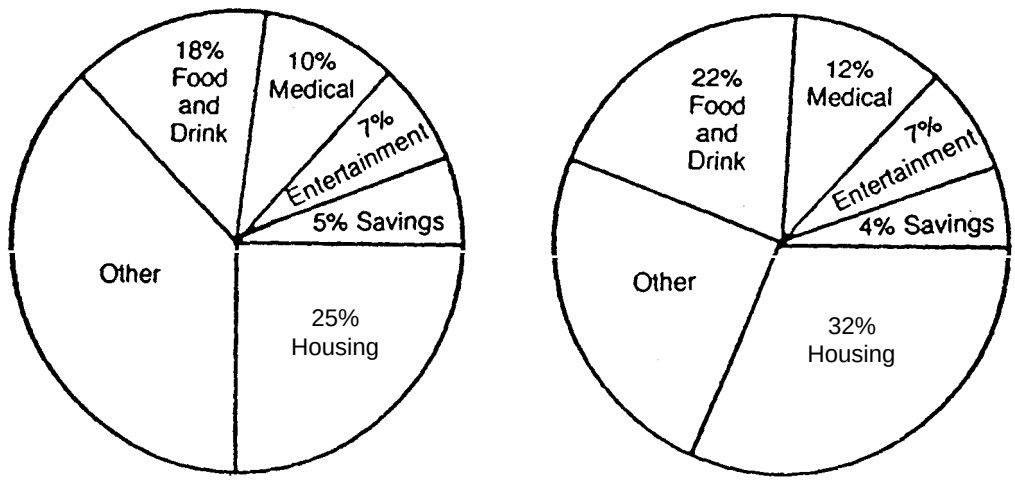


17. Sam tries to construct a pie graph representing eye color of his classmates. In his class of 24 students, 6 students have blue eyes, 12 students have brown eyes, 5 students have hazel eyes, and 1student has green eyes. His teacher tells him that his graph (shown above) is not correct. In order to fix the graph, Sam should
    (~, increase the amount of green and decrease the amount of blue
    diYincr~se the amount of blue and decrease the amount of hazel
    (C) decrease the amount of blue and increase the amount of brown
    (D) decrease the amount of hazel and increase the amount of brown
    (E) increase the amount of hazel and increase the amount of blue

18. If D is between A and Bon $\overline{AB}$, which of the following must be true?
    ~AD-DB
    /CCBYDB - AB - AD
    (C) AD -= AB + DB
    (D) DB - AD + AB
    (E) AB -= AD -= BD

Questions 19 and 20 are based on the following graph.

AVERAGE FAMILY'S EXPENSES



1970
Average Income $12,000

1975
Average Income $16,000

19. How much more money did the average family spend on medical expenses in 1975 than in 1970?

(A) $500-$600
(B) $600-$700
(C) $700-$800
(D) $800-$900
(E) $900-$1,000

20. What was the approximate increase from 1970 to 1975 in the percentage on food and drink?

(A) 4% (B) 18% (C) 22% (D) 40% (E) 50%

21. In a senior class of 800, only 240 decide to attend the senior prom. What percentage of the senior class attended the senior prom?

(A) 8%
(B) 24%
(C) *30%*
(D) 33%
(E) 80%

22. What is the probability of tossing a penny *twice* so that both times it lands heads?

(A) 1/8 (B) 1/4 (C) 1/3 (D) 1/2 (E) 2/3

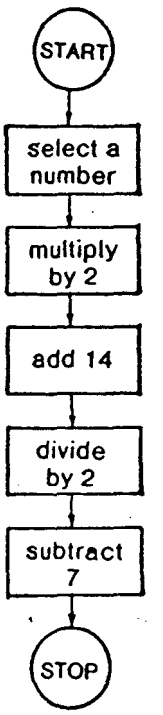
23 .. 0074 is how many times smaller than 740,000?

(A) 1,000,000
(B) 10,000,000
c:i9) 100,000,000
(D) 1,000,000,000
(E) 10,000,000,000

24. A suit that originally sold for $120 is on sale for $90. What is the rate of discount?

(A) 20%
(fW 25 %
(C) 30%
(D) *33V3%*
(E) 75%

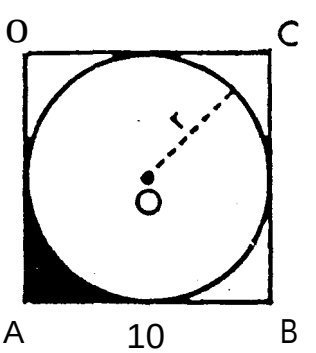
25. In this flow chart, regardless of the number you select, the number at the end is always



(A) 5
(B) less than 14
(,/'(~Dthe same as the original ..... number
(D) twice the original number
(E) an odd number

26. To change 3 miles to inches, you should

(A) multiply 3 times 5,280
. (B) multiply 3 times 5,280 and then divide by 12
~c:("Cr)nultiply 3 times 5,280 and then multiply by 12
c{D) divide 3 into 5,280 and then multiply by 12
(E) divide 3 into 12 and then multiply by 5,280



27. Circle 0 is inscribed in square ABCD as shown above. The area of the .~~ded region is approximately

.~~ .10 (B) 25 (C) 30 . (D) 50 (E) 75

28. Today is Lucy's fourteenth birthday. Last year she was three years older than twice Charlie's age at that time. Using C for Charlie's age now, which of the following can be used to determine Charlie's age now?

(A) 13 - 3 - 2(C - 1)
(B) 14 - 3 - 2C
(C) 13 - 3 - 2C
(D) 13 + 3 - 2C
(E) 13 + 3 - 2(C - 1)

29. Angela has nickels and dimes in her pocket. She has twice as many dimes as nickels. What is the best expression of the amount of money she has in cents if x equals the number of nickels she has?

(A) 25x
(B) 10x + 5(2x)
(C) x + 2x
(D) 5(3x)
(E) 20(x + 5)

30. Four construction workers build a house containing 16 rooms. If the house has 4 floors and they take exactly 4 months (without stopping) to build it, then which of the following *must* be true?

I. They build 4 rooms each month.
II. Each floor has 4 rooms.
III. They build an average of 1 floor per month.
IV. The house averages 4 rooms per floor.

(A) I and II
(B) I, II, and III
(C) II and III
(D) III and IV
(E) I, II, III, and IV

31. 750 times 45 equals P. Therefore 750 times 44 equals

(A) P - 45
(B) P - 750
(C) P - 1
(D) 44P
(E) 750P

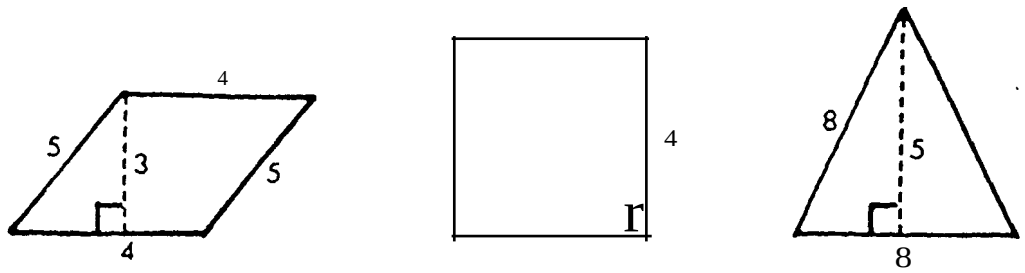
32. A square 4 inches on a side is cut up into smaller squares 1 inch on a side. What is the maximum number of such squares that can be formed?

(A) 4 (B) 8 (C) 16 (D) 36 (E) 64

33. A color television set is marked down 20% to $320. Which of the following equations could be used to determine its original price, P?

(A) $320 - .20 - P
(B) .20P - $320
(C) P - $320 + .20
(D) .80P + .20P - $320
(E) .80P = $320

34. The areas of which of the following are equal?



I II III

(A) I and II
(B) I and III
(C) II and III
(D) I, II, and III
(E) none of them are equal

35. Which of the following is the most appropriate unit for describing the weight of a bowling ball?

(A) milligrams
(B) centigrams
(C) grams
(D) decagrams
(E) kilograms

Questions 36 *and* 37 *refer to the graph on the following page.*

36. Of the seven days shown, about what percent ot the days did the maximum temperature exceed the average temperature?

(A) 3% (B) 4% (C) 43% (D) 57% (E) 93%

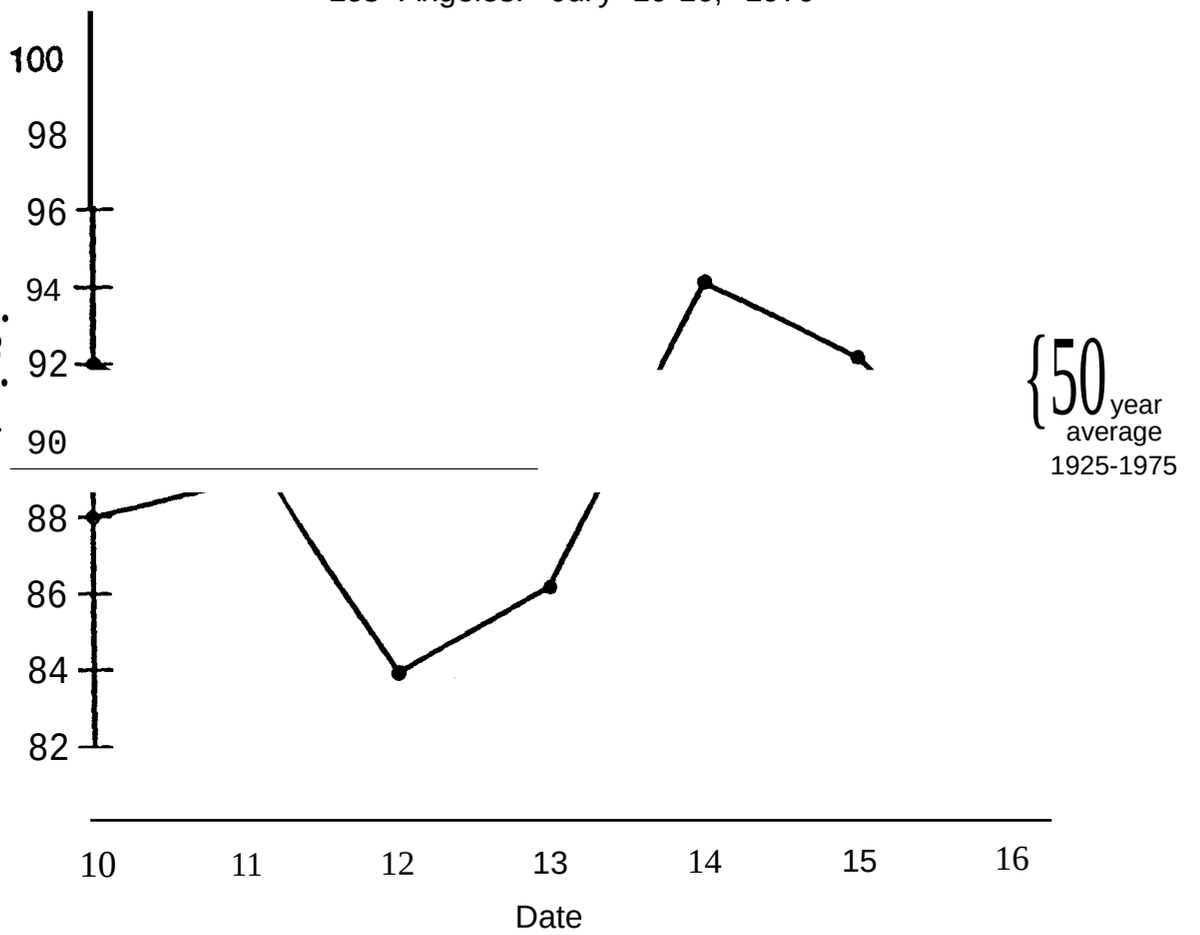
37. Between which two dates shown was the greatest increase in maximum temperature?

(A) July 11-12
(B) July 12-13
(C) July 13-14
(D) July 14-15
(E) July 15-16

38. When Francisco multiplies $(x + 1)(x + 2)$ he gets $x^2 + 3x + 2$ as an answer. One way to check this answer would be to

(A) divide $(x + 1)$ by $(x + 2)$
(B) divide $(x + 2)$ by $(x + 1)$
(C) plug in a positive integer for x
(D) square $(x + 1)$
(E) use reciprocals

Maximum Temperature Readings
Los Angeles: Jul'y 10-16, 1979



39. How many paintings were displayed at the County Museum of Art if 30% of them were by Monet and Monet was represented by 24 paintings?
(A) 48 (B) 50 (C) 60 (D) 76 @ 80

The sum of two numbers equals one of the numbers.

40. If the above statement is true, which of the following best represents the relationship?
(A) x+y-y+x
(B) (x)(y)- 1
(C) x + y-l
(E) x + y - x + 1

STOP. IF YOU FINISH BEFORE TIME IS CALLED, CHECK YOUR WORK ON THIS SECTION ONLY .. DO NOT WORK ON ANY OTHER SECTION IN THE TEST.

Test 1

1. 3.42 is between
   a. 3.04 and 3.3
   b. 3.43 and 3.59
   c. 3.03 and 3.41
   d. 3.4 and 3.6
   e. 3.3 and 3.4

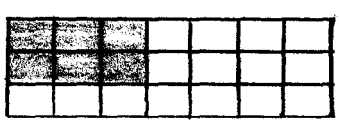
2. Which of the following fractions is the least?
   a. 9/8
   b. 28/29
   c. 8/4
   d. 2/1
   e. 36/35

3. Which of the following is the greatest?
   a. 5.83
   b. 5.6
   c. 5.09
   d. 5.009
   e. 5.7341

4. $\frac{1}{100} + \frac{1}{10000}$

   a. 1.01
   b. .11
   c. .1001
   d. 1.001
   e. .0101

5. In the figure below, the shaded portion is what fraction of region ABeD?



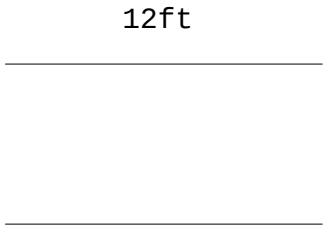
   a. 7/2
   b. 1/3
   c. 2/7
   d. 5/6
   e. 6/5

6. Thirty students are awarded scholarships to college, this number comprises of 40% of the total number of students who applied. How many students applied for scholarships?
   a. 12
   b. 700
   c. 120
   d. 60
   e. 75

7. In a school of 300 students, 60 do not sign up for after school sports. What percent of the school signs up for after school sports?
   a. 40%
   b. 80%
   c. 18%
   d. 20%
   e. 60%

8. In order to pass a test, a student must answer 27 questions correctly in order to receive the lowest passing grade of 75%. How many questions are on the test?
   a. 102
   b. 54
   c. 72
   d. 36
   e. 64

9. What is the probability of tossing tails four consecutive times with a two sided fair coin?
   a. 1/4
   b. 1/2
   c. 1/16
   d. 1/3
   e. 1/8



10. Joe wants to cover a floor with the measurement above with tiles. The tiles he wants are 12 inch square tiles sold in cartons of 6 per carton. How many cartons of tiles does Joe need to buy?
    a. 24
    b. 96
    c. 4
    d. 16
    e. 8

11. Tom can paint a house in 3 hours. Dick can paint the house in 6 hours. How long will it take to paint the house if they work together?
    a. 9
    b. 4.5
    c. 2
    d. 7
    e. 3

12. If X = 3B and B = 7, then X =
    a. 3/7
    b. 10
    c. 17
    d. 21
    e. 7

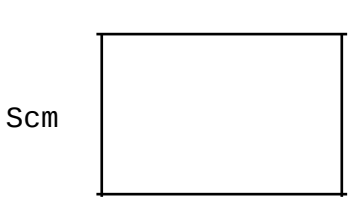
13. If X = 1/2tY and t = 10, then X =
    a. 5
    b. lOY
    c. 5Y
    d. 1/5Y
    e. 1/2Y

14. In a class of 25 students, 15 are boys. What percent of the students in this class are boys?
    a. 10%
    b. 15%
    c. 25%
    d. 30%
    e. 60%

15. If the scale on a map shows that 1mm represents 30m and one road is show as 20mm long, how many meters long is the road?
    a. 30m
    b. 60m
    d. 600m
    e. 50mm
    f. 50m

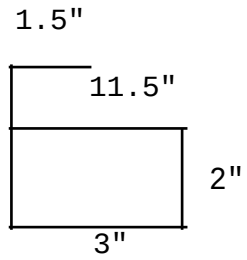
16. 

What is the maximum number of pieces of birthday cake of size 4" by 4" that can be cut from the cake above?
    a. 5
    b. 10
    c. 16
    d. 20
    e. 25

17. 

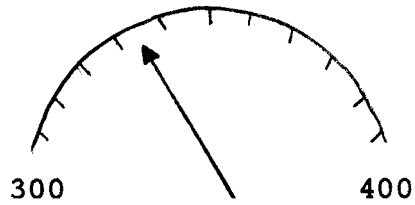
What is the perimeter, in meters, of the rectangle above?
    a. 24m
    b. 12m
    c .. 12m
    d .. 24m
    e. 25m

18.



What is the area of the figure above?
a. 8.25"
b. 15"
c. 6"
d. 8"
e. 7.25"

19.



On the scale above, the arrow points to
a. 350
b. 330
c. 335
d. 330 1/2
e. 365

20. If a piece of wood was measured in feet, the length expressed in yards would be
a. 3 times as great
b. 1/2 as great
c. twice as great
d. one-third as great
e. one-fifth as great

21. If x is a positive integer in the equation 4x = y, then y must be
a. a positive even integer
b. a negative even integer
c. zero
d. a positive odd integer
e. a negative odd integer

22. Sally has 3 CD's, John has 8 CD's, Tom has 1/2 as many CD's as John, and Rita has 3 times as many CD's as Sally. How many CD's do Tom and Rita have together?
 a. 11
 b. 15
 c. 24
 d. 13
 e. 25

23. If a, b, and c are all positive whole numbers greater than 1 such that a > b > c, which of the following is the largest quantitiy?
 a. (a+b)c
 b. ab+c
 c. ac+b
 d. they are all equal
 e. cannot be determined

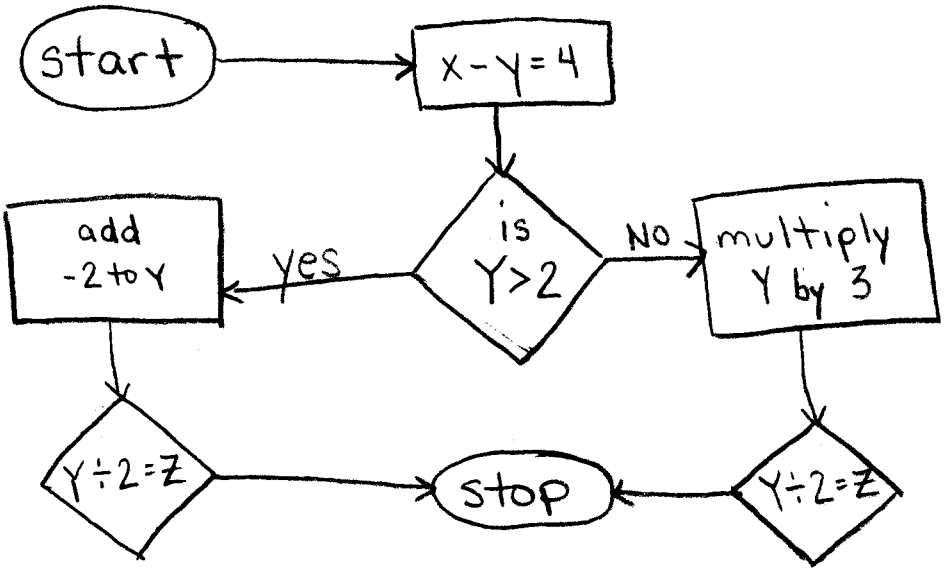
24. x and yare fv:c\--".-s of 61

Which of the following can **NOT** be true according to the statement above?
 a. x=l, y=6
 b. x=-2, y=-3
 c. x=-2, y=3
 d. x=-6, y=-1
 e. x=2, y=3

25. If x > I, which of the following decreases as x decreases?
I. x2. II. 2xZ -x III. l/x+l

 a. I
 b. II
 c. III
 d. I and II
 e. II and III

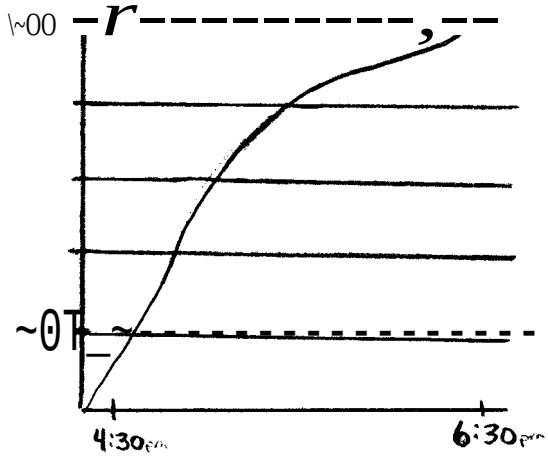
26.



In the flow chart above, if x = 7, then what is the value of z?

a. 13
b. 1/2
c. 2
d. 5/2
e. 5

27.



According to the graph above, what was the temperature at 5 p.m.?

a. 85
b. 80
c. 100
d. 62
e. 120

	token chart					
			student			
	Doug	Chris	Jose	Maria	Zack	Jen
A	7	12	3	9	18	1
B	4	3	8	19	1	18
C	21	18	17	8	17	3
D	3	18	7	16	9	19
E	4	1	19	21	13	17
F	19	19	3	8	16	6
G	3	6	18	7	19	2
H	5	3	1	16	2	7

28. According to the chart above, from wh\cnteacher did Chris recieve the same number of tokens as Jen did from teacher D?
    a. E
    b. H
    c. G
    d. F
    e. B

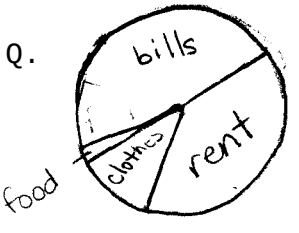
29. According to the chart above, what student did teacher D give the same number of tokens as teacher G gave Maria?
    a. Doug
    b. Chris
    c. Jose
    d. Zack
    e. Jen

30.

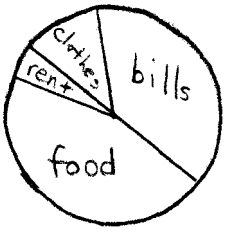
SDendina	
clothes	= 16%
food	= 10%
bills	= 34%
rent	= 43%

Which pie graph shows the apporximate spending above?

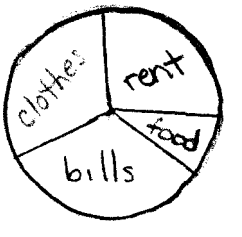
a.



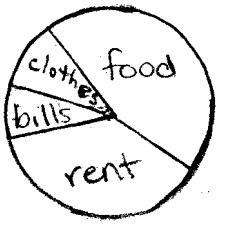
b.



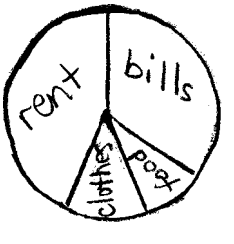
c.



d.

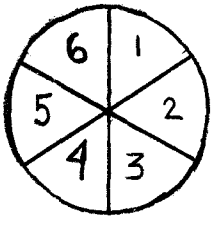


e.



31. How many 4 square inch tiles fit on a kitchen floor that is 27 ,VI. long and 32'lf\. wide?
 a. 14
 b. 216
 c. 42
 d. 48
 e. 52

32.



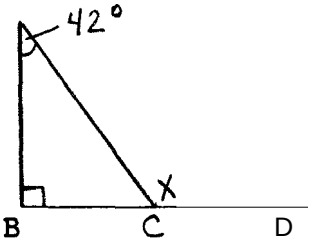
In spinning the spinner above 2 times, what are the chances of spinning a 4 both times?
 a. 1/36
 b. 1/18
 c. 1/7
 d. 1/6
 e. 1/12

33. If 18 1/4 ft. = 1 rope, how many inches are in 3 ropes?
 a. 676.75
 b. 54.75
 c. 36 1/4
 d. 219
 e. 657

34. 1.5x cm

If X equals 2cm, what is the area of the figure above?
 a. 3cm
 b. 10cm
 c. 6cm
 d. 13cm
 e. 7cm

35. Which of the following is the smallest?
   a. 7/9
   b. 1/3
   c. 1/6
   d. 6/18
   e. 1/4

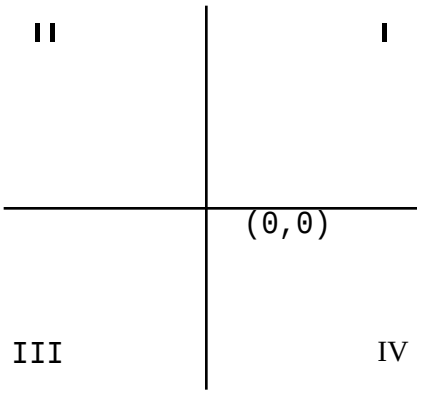
36. 

Given the $\triangle ABC$ with $\angle A = 42°$, and angle B is a right angle, what is X in degrees?
   a. 4°
   b. 132°
   c. 90°
   d. 48°
   e. 145°

37. Round off to the nearest hundredth: 342.8635
   a. 340
   b. 342.9
   c. 300
   d. 342.87
   e. 342.86

38. John is drawing a reproduction of a painting so that 1mrn represents 18 meters. If the painting is 72 meters long, how long will John's drawing be?
   a. 400mrn
   b. 4m
   c. 12.86m
   d. 4mrn
   e. 1.286m

39.



In the coordinate graph above, the point represented by (2,-6) would be found in which quadrant?

a. I
b. II
c. III
d. IV
e. Cannot be determined

40. The fraction 2/8 is between the numbers listed in which of the following pairs?

a. 3/8 and 5/8
b. 1/3 and 2
c. .4 and 1.3
d. .04 and .24
e. .2 and 1

Answers – Test 1

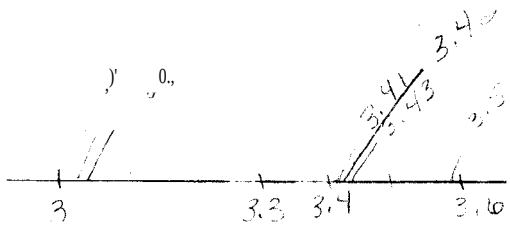
I. d
2. b
3. a
4. e
5. c
6. e
7. b
8. d
9. c
10. d
11. c
12. d
13. c
14. e
15. d
16. e
17. d
18. a
19. c
20. d
21. a
22. d
23. a
24. c
25. d
26. b
27. c
28. d
29. c
30. e
31. d
32. a
33. e
34. c
35. c
36. b
37. e
38. b
39. d
40. e

Answer Kv~j~,\

Test 1

1. **3.42 *is* between**
   - **a. 3.04 and 3.3**
   - **b. 3.43 and 3.59**
   - **c. 3.03 and 3.41**
   - **d.** 3.4(**and** 3.6<.
   - **e.** 3. 3:~**and 3.4**

d



2. **Which of the following fractions is the least?**
   - **a. 9/8** -I~ - >,
   - **b. 28/29-** .91 - L I
   - **c. 8/** 4~ 2 -;--- >
   - **d.** *zt i-r.* '7 \
   - **e.** 36/35-1 >\

b,

3. **Which of the following is the greatest?**
   - **a. 5.83**
   - **b. 5.6**
   - **c. 5.09** ~_jL'
   - **d. 5.009** 5
   - **e. 5.7341**

'5-,(y

Q

(Q

4. $\frac{1}{100} + \frac{1}{10000}$
   - **a. 1.01**
   - **b. .11**
   - **c. .1001**
   - **d. 1.001**
   - **e. .0101**

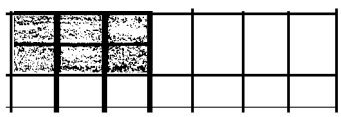
o O \
t . O C)O \
. O \
IJ.p~~\l_<:.1
b ~\ '.,- c.C

e e

+

.0101

5. **In the figure below, the shaded portion is what fraction of region ABeD?**



   - **a. 7/2**
   - **b. 1/3**
   - **c. 2/7**
   - **d. 5/6**
   - **e. 6/5**

shaded 3/8
total 8

6. Thirty students are awarded scholarships to college, this number comprises of 40% of the total number of students who applied. How many students applied for scholarships?

a. 12
b. 700
c. 120
d. 60
e. 75

7. In a school of 300 students, 60 do not sign up for after school sports. What percent of the school signs up for after school sports?

a. 40%
b. 80%
c. 18%
d. 20%
e. 60%

8. In order to pass a test, a student must answer 27 questions correctly in order to receive the lowest passing grade of 75%. How many questions are on the test?

a. 102
b. 54
c. 72
d. 36
e. 64

9. What is the probability of tossing tails four consecutive times with a two sided fair coin?

a. 1/4
b. 1/2
e. 1/8

10. Joe wants to cover a floor with the measurement above with tiles. The tiles he wants are 12 inch square tiles sold in cartons of 6 per carton. How many cartons of tiles does Joe need to buy?..

a. 24
b. 96
c. 4
d. 16
e. 8

11. Tom can paint a house in 3 hours. Dick can paint the house in 6 hours. How long will it take to paint the house if they work together?

a. 9
b. 4 • 5
c. 2
d. 7
e. 3

12. If X = 3B and B = 7, then X =

a. 3/7
b. 10
c. 17
d. 21
e. 7

13. If X = 1/2tY and t = 10, then X =

a. 5
b. lOY
c. SY
d. l/SY
e. 1/2Y

14. In a class of 25 students, 15 are boys. What percent of the students in this class are boys?

a. 10%
b. 15%
c. 25%
d. 30%
e. 60%

IS of → cross multiply

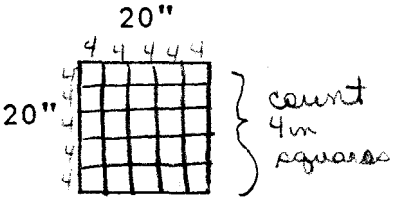
25 | 1500 → 60 → e

15. If the scale on a map shows that 1mm represents 30m and one road is show as 20mm long, how many meters long is the road?

a. 30m
b. 60m
d. 600m
e. 50mm
f. 50m

600 → d

16.



e

4 | 20 → 5

4 | 20 → 5

5 x 5 = 25

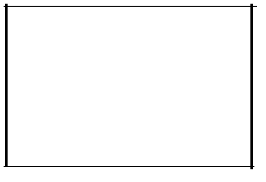
What is the maximum number of pieces of birthday cake of size 4" by 4" that can be cut from the cake above?

a. 5
b. 10
c. 16
d. 20
e. 25

17.

7cm

Scm



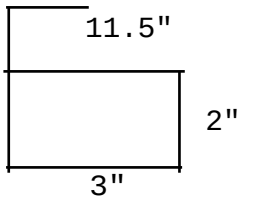
What is the perimeter, in meters, of the rectangle above?

a. 24m
b. 12m
c .. 12m
d .. 24m
e. 25m

7 + 5 + 7 + 5 = 24 cm

or

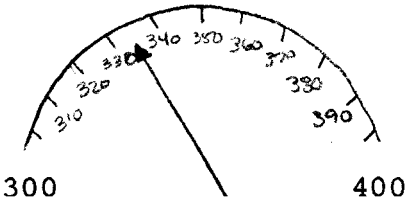
2 | 24.00 → 12

18. 

① area of a rectangle is L x W
② There are 2 rectangles

1.5 × 1.5 = 2.25 (75, 12.5)
2 × 3 = 6
together 2.25 + 6.00 = 8.25 →

What is the area of the figure above?
a. 8.25"
b. 15"
c. 6"
d. 8"
e. 7.25"

19. 

On the scale above, the arrow points to
a. 350
b. 330
c. 335
d. 330 1/2
e. 365

20. If a p\ ce of wood was measured in feet, the length expressed in yards would be
a. 3 times as great
b. 1/2 as great
c. twice as great
d. one-third as great
e. one-fifth as great

3 ft = 1 yd

d

21. If x is a positive integer in the equation 4x = y, then y must be
a. a positive even integer - makes y an even positive #
b. a negative even integer - makes y an even negative #
c. zero - makes y zero
d. a positive odd integer - makes y an odd positive #
e. a negative odd integer - makes y an odd negative

a - because x is positive and 4 is positive y will be positive because 4 is an even number, y will be an even number

22. Sally has 3 CD's, John has 8 CD's, Tom has 1/2 as many CD's as John, and Rita has 3 times as many CD's as Sally. How many CD's do Tom and Rita have together?

a. 11
b. 15
c. 24
d. 13
e. 25

4 + 9 = 13 → d

23. If a, b, and c are all positive whole numbers greater than 1 such that a > b > c, which of the following is the largest

b. ab+c
c. ac+b
d. they are all equal
e. cannot be determined

24. x and y are factors of 61

Which of the following can **NOT** be true according to the statement above?

a. x=1, y=6
b. x=-2, y=-3
c. x= - 2, y= 3
d. x= - 6, y= -1
e. x= 2 , y= 3

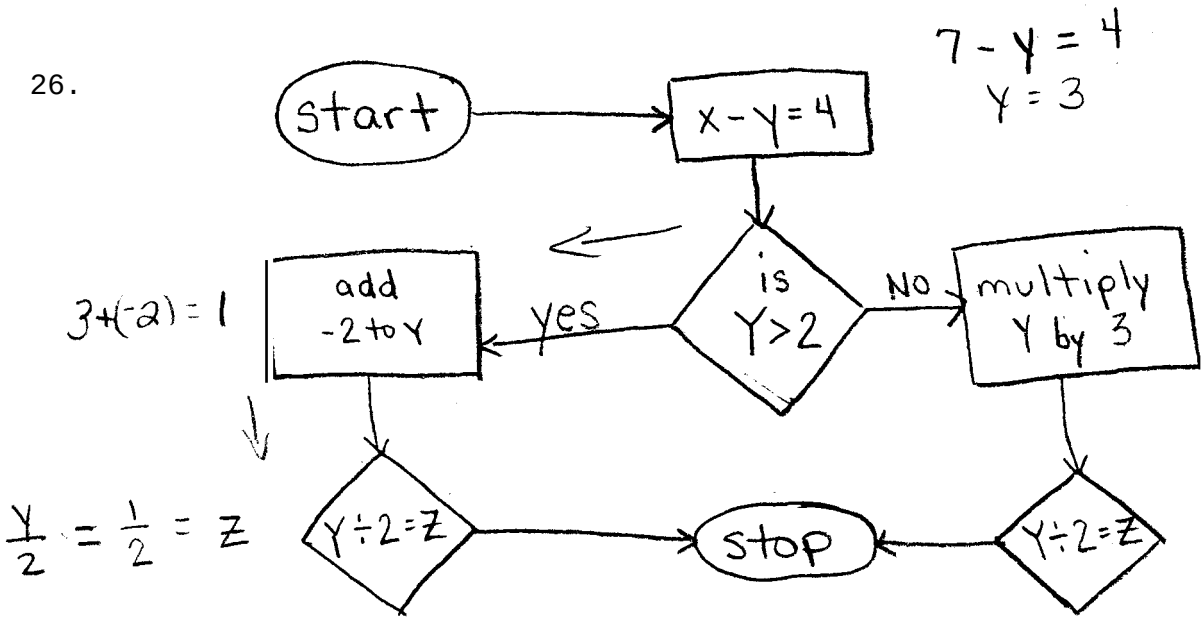
25. If x > 1, which of the following decreases as x decreases?

I. x^2 II. $2x^2 - x$ III. $1/x+1$

a. I
b. II
c. III
d. I and II
e. II and III

d as value of x decreased (from 3 to 2), value of I and II decreased but value

26.

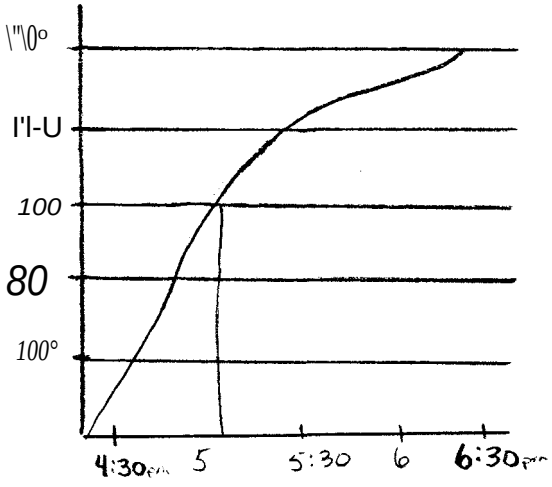


In the flow chart above, if x = 7, then what is the value of z?

a. 13
b. 1/2
c. 2
d. 5/2
e. 5

b

27.



According to the graph above, what was the temperature at 5 p.m.?

a. 85
b. 80
c. 100
d. 62
e. 120

C.

	token chart					
	student					
	Doug	Chris	Jos	Maria	Zack	Jen
A	7	12		9	18	
B	4	3		19	1	
C	21	18		8	17	
D				16		
E	4	1		21	13	17
F	19			8	16	6
G	3			7	19	2
H	5	3	1	16	2	7

28. According to the chart above, from which teacher did Chris recieve the same number of tokens as Jen did from teacher D?
    a. E
    b. H
    c. G
    d. F
    e. B

d

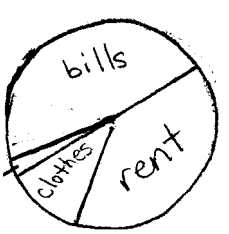
29. According to the chart above, what student did teacher D give the same number of tokens as teacher G gave Maria?
    a. Doug
    b. Chris
    c. Jose
    d. Zack
    e. Jen

30.

Spending	
clothes	= 16%
food	= 10%
bills	= 34%
rent	= 43%

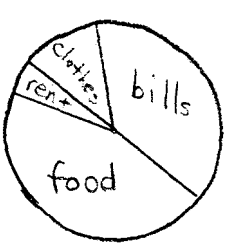
Which pie graph shows the apporximate spending above?

Q.

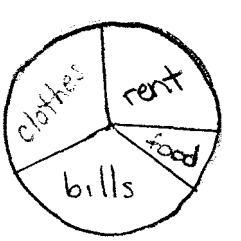


Food

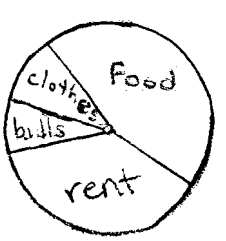
b.



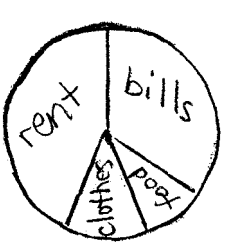
c.



d.



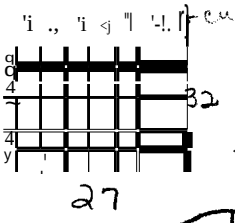
e.



e

31. How many 4 square inch tiles fit on a kitchen floor that is 27 \/\. long and 32 *in.* wide?

a. 14
b. 216
c. 42
d. 48
e. 52



count 4 inch squares

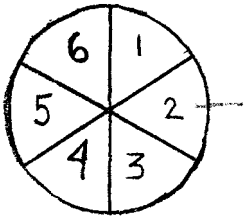
= 48 d

4⟌27 → 6, 24, 3 ignore remainder

4⟌32 → 8

6 × 8 = 48

32.



In spinning the spinner above 2 times, what are the chances of spinning

a. 1/36
b. 1/18
c. 1/7
d. 1/6
e. 1/12

33. If 18 1/4 ft. = 1 rope, how many inches are in 3 ropes?

a. 676.75
b. 54.75
c. 36 1/4
d. 219
e. 657

① first

② convert to inches

18.25 × 3 = 54.75"

e

34. 1.5x cm

x

If X equals 2cm, what is the area of the figure above?

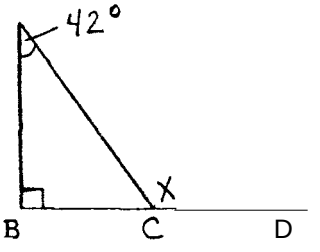
a. 3cm
b. 10cm
c. 6cm
d. 13cm
e. 7cm

L x W

35. Which of the following is the smallest?
a. 7/9 :.113
b. 1/3:,33
c. *1/6=,\\P*
d. 6/18':,33
e. 1/4:...:2..$

C

36.



CD T~ ~ CvT'-C/J.,Q -)80°
Q} ~ c:u'\.(l~~ qo"
G) o..r"v--O~1- u..P-Ld :- l.\ d-
+qo
\3~

Given theA-ABC withLA=42 , and angle B is a right angle, what is X in degrees?
a. 4°
b. *132°*
c. 90"
d. 48°
e. 145°

(4) amount left 180 -\3:;:1. 48
BCD (straight line) = 180°
one angle is 48, other is 180 - 48
132 → b

37. Round off to the **nearest hundredth: 342.8635**
a. 340
b. 342.9
c. 300
d. 342.87
e. 342.86

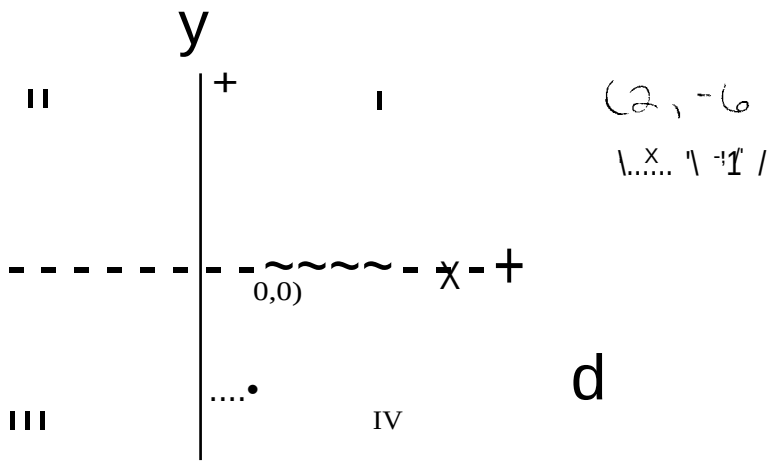
tenth hundredth
342.8635
less than 5 so we round down

3t4~,8(.o -7 ~

38. John is drawing a reproduction of a painting so that 1mm represents 18 meters. If the painting is 72 meters long, how long will John's drawing be?
a. 400mm
b. 4m
c. 12.86m
d. 4mm
e. 1.286m

model (mm)
" '~A"-(~j,./)\,,.D~
,
1'3
X/72
cross multiply 72 × 1 = 72
18 · x = 18x
18x = 72
and divide
18x/18 = 72/18
4
18 | 72
4mm → d

39.

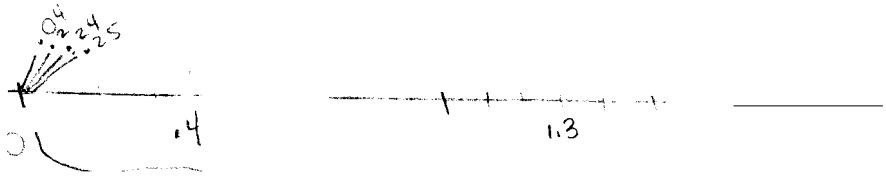


In the coordinate graph above, the point represented by (2,-6) would be found in which quadrant?

a. I
b. I I
c. I I I
d. IV
e. Cannot be determined

40. The fraction 2/8 is between the numbers listed in which of the following pairs?

a. 3/8 and 5/8
b. 1/3 and 2
c .. 4 and 1.3
d. .04 and .24
e .. 2 and 1



Answers - Test 1

1. d
2. b
3. a
4. e
5. c
6. e
7. b
8. d
9. c
10. d
11. c
12. d
13. c
14. e
15. d
16. e
17. d
18. a
19. c
20. d
21. a
22. d
23. a
24. c
25. d
26. b
27. c
28. d
29. c
30. e
31. d
32. a
33. e
34. c
35. c
36. b
37. e
38. b
39. d
40. e

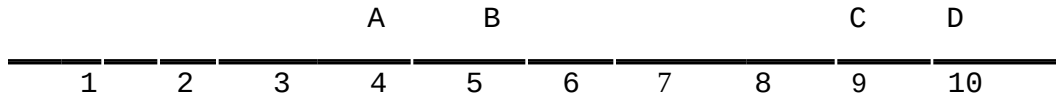
Test 2

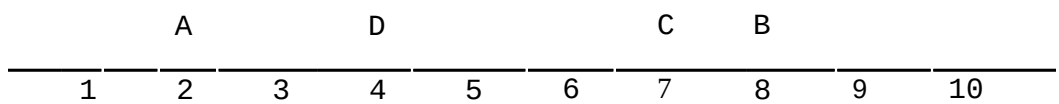
1. A model is made so that 1 millimeter represents 15 meters. How long should the model be to represent 1500 meters?
   a. Lmm
   b. 10mm
   c. 100mm
   d. 1000mm
   e. 10000mm

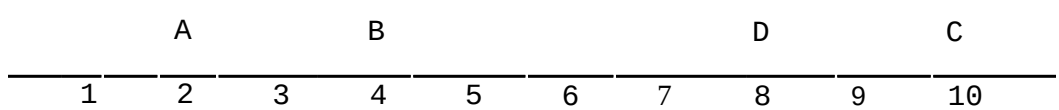
2. To completely cover the wall in the closet, 13 feet 7 inches of wall paper is needed. There are 22 feet 3 inches of wall paper in the roll to be used. How much paper will be left after covering the wall?
   a. 9ft 6in
   b. 9ft 8in
   c. 8ft 6in
   d. 8ft 8in
   e. 9ft 4in

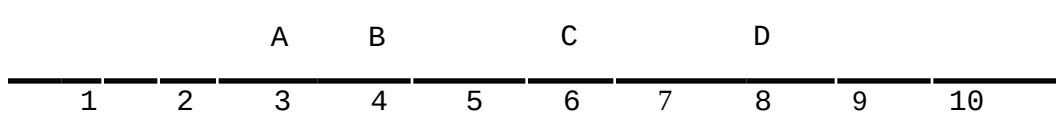
3. At a sale Rita bought a coat at 40% off the regular price of $170. Which of the following is a way to determine the sale price of the coat?
   a. 40% of $170
   b. $170 - $40
   c. $170 - (60% of $170)
   d. 60% of $170
   e. (60% of $170)- $170

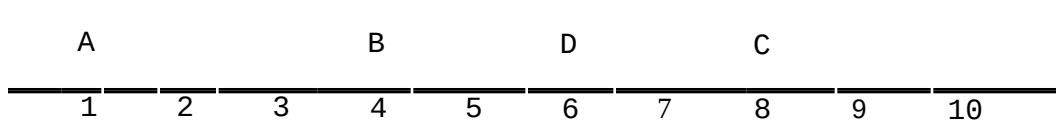
4. Points A, B, C, D are all on the same line. If AD = 6 and BC = 4, which number line represents a possible arrangement of the points?

a.


b.


c.


d.


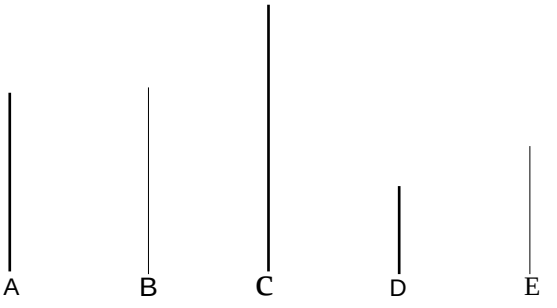
e.


5. Bananas are priced at 17 cents each, or 4 for 64 cents. How much is saved per banana by buying 4 bananas?
   a. 4 cents
   b. 1 cent
   c. 16 cents
   d. 17 cents
   e. 9 cents

6. A student claims that when two even numbers are added, the sum consists only of even digits. Which of the following shows that the student is NOT correct?
   a. 18 + 12 = 30
   b. 17 + 18 = 35
   c. 18 + 46 = 64
   d. 17 + 27 = 44
   e. 18 + 24 = 42

7. Which of the following has the greatest value?
   a. (.7 x .4) + 2.1
   b. 7 + (.4 x 2.1)
   c. 7 x .4 x 2.1
   d. 7 + .4 + 2.1
   e. (.7 + .4) x 2.1

8.



In the figure above, if the first line is to represent a weight of 400 grams, which of the others is most likely to represent 300 grams?
   a. A
   b. B
   c. C
   d. D
   e. E

9. How many 3 square inch tiles fit on a floor that is 18 1/2 inches long 20 inches wide?
   a. 30
   b. 36
   c. 41
   d. 12
   e. 37

10. The chart gives data about the distribution of four compact-car models in a company parking lot. Which of the following best represents the given data?

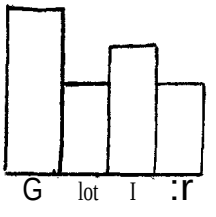
car model	freauencv
G	6
H	4
I	5
J	4

a.

b.

c.

e.



11. $\frac{1}{100}$ … $\frac{1}{1000}$

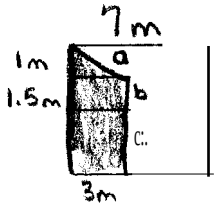
a. .011
b. .11
c. 1.11
d. .101
e. 1.01

12. A study showed that on average teachers earned 40% more per year than secretaries. If this trend continues, the annual salary of teachers would be what percent greater than that of secretaries after 8 years?

a. 8%
b. 24%
c. 40%
d. 240%
e. 80%

13. To find the area of the shaded portion of the figure below you need the value of?

a. a only
b. b only
c. conI y
d. a and b
e. a and c



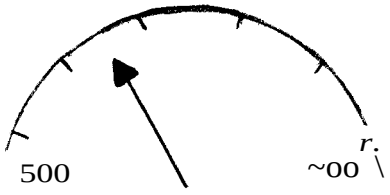
14. .reams

	A	B	C	D	E
Oreos	5	8	5	4	1
Nicks	4	3	1	6	2
Bulls	6	3	6	4	6
Bears	4	6	4	3	4
Sox	2	5	6	4	7

Each of five clubs in one town has a team that plays teams from other towns. Although these teams do not play each other, they rank their teams by the number of games they've won. Ann said, " If the Bulls win their next game, the Sox will be in second place." If Ann is right, which column above could show the number of games each team has won so far?

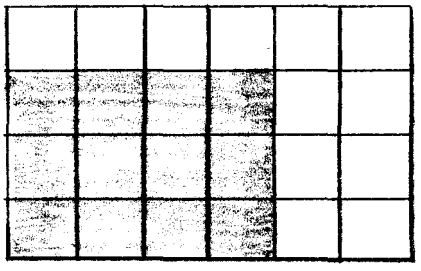
a. A
b. B
c. C
d. D
e. E

15. A class with 80 students has 60 female students. The ratio between females to males in the class is?
    a. 3: 1
    b. 1: 3
    c. 2:1
    d. 1:2
    e. 4: 3

16. 

On the scale above, the arrow points to
    a. 501 1/2
    b. 525
    c. 515
    d. 510 1/2
    e. 530

17. In the figure, the shaded portion is what fraction of region ABeD?
    a. 1/2
    b. 4/3
    c. 2/3
    d. 3/4
    e. 1/4



18. Which of the following is equal to half a million?
    a. 500,000
    b. 50,000,000
    c. 500,000,000
    d. $\frac{1}{5,000,000}$
    e. $\frac{5}{1,000,000}$

19. Which of the following could be the weight of an average man?
   a. 70 kg
   b. 7 kg
   c. 1 kg
   d. 70 g
   e. 70 mg

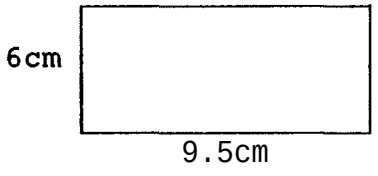
20. A is 5 more than 4 times B

Which of the following is NOT a way to express the relationship above?

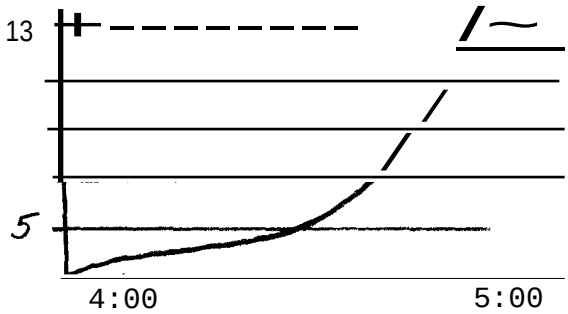
   a. $B = \frac{A-5}{4}$
   b. $A - 4B = 5$
   c. $4B + 5 = A$
   d. $A - 5 = 4B$
   e. $4B - 5 = A$

21. Each of five people earned one of the commissions shown below in one day. Which is the greatest?
   a. 5% of $900
   b. 11% of $300
   c. 13.5% of $100
   d. 19% of $100
   e. 25% of $60

22. What is the perimeter, in centimeters, of the rectangle shown?
   a. 20.2
   b. 31
   c. 15.5
   d. 57
   e. 21.5



23.



According to the graph, approximately how high was the snow at 4:40?

a. 7 inches
b. 11 inches
c. 9 inches
d. 6 inches
e. 1 foot

24. Three students are taking a test. Each student can answer 7 to 9 multiple choice questions, 4-8 short answer questions, and 6-9 fill in the blank. The minimum and maximum number of questions, respectively that a student can answer are

a. 4 and 9
b. 6 and 8
c. 17 and 26
d. 4 and 43
e. 17 and 43

25. 7.39 is between

a. 7.0 and 7.3
b. 7.02 and 7.05
c. 7.8 and 8.9
d. 7.3 and 7.5
e. 7.035 and 7.362

26. --,-=x,-+---L_

0	7
3	19
6	31
9	43
10	47

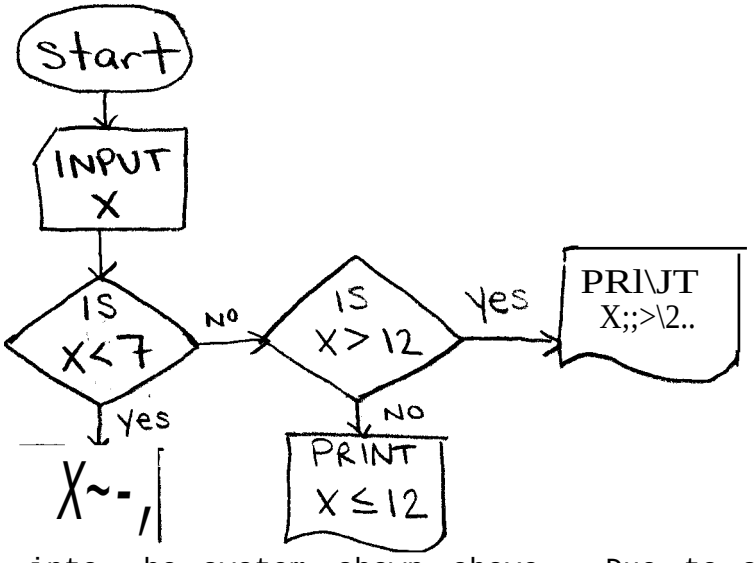
Which of the following formulas expresses the relationship between x and y in the table above?

a. $y = x + 6$
b. $y = x + 7$
c. $y = 4x + 7$
d. $y = 4x - 6$
e. $y = x - 7$

27. It took Jen 6 hours to drive from A to B when she averaged 60 miles per hour. Pulling a trailer on the return trip from B to A she averaged 40 miles per hour. How long did her return trip take?

a. 4
b. 7
c. 8
d. 9
e. 10

28.



X was put into the system shown above. Due to a printing malfunction, all that appeared on the printout was" X 12". Which of the following statements about N must be false?

a. X could have been 9
b. X could have been 6.4
c. X could habe been 11
d. X could have been 9.85
e. X could have been 8.63

29.

$\overline{10^5}\ \overline{10^4}\ \overline{10^3}\ \overline{10^2}\ \overline{10^1}\ \overline{10^0}$

All of the digits 4, 5, 6, 7, 8, and 9 are used to fill in the display above. The digits 6 and 4 are both in positions adjacent to the 8 which is in the 10' position. The digits 7 and 9 are in positions that are next to each other. The digit 5 is to the right of the digit 7. Which of the following need not be true?

a. The thousands' digit is the 5
b. The digits 4 and 5 are in adjacent positions
c. The number formed is an even number
d. The number formed is greater than 900,000
e. The numbers 8 and 4 are in adjacent positions

30. | Some values of X are more than 100 |

Which of the following is not consistent with the sentence above?

a. 285 is a value of X
b. Some values of X are less than 100
c. Some values of X are more than 100
d. No numbers more than 100 are values of X
e. 108 is not a value of X

31. If a finger was measured in millimeters, the length expressed in centimeters would be

a. twice as great
b. half as great
c. ten times as great
d. one-tenth as great
e. one-thousandth as great

32. Which of the following fractions is the least?

a. 12/11
b. 900/899
c. 4/3
d. 60/59
e. 88/89

33. Two dice are thrown in a certain board game to determine the number of spaces to move. One player throws the dice and the same number comes up on each of the dice. What is the probability that the sum of the two numbers is 7?

a. 0
b. 1/6
c. 1/2
d. 1
e. 1/12

34. IF A ◊ 10 = Q, then A ◊ 20 =

a. 20Q
b. 2Q
c. Q ÷ 2
d. Q − 10
e. Q + 20

35. When Bob was calculating the amount of wood to buy for work, he accidentally divided by 3 when he should have multiplied by 3. The answer he got was 96. The correct answer should have been?
    a. 288
    b. 32
    c. 13
    d. 864
    e. 18

36. If A, b, and c are positive numbers and A = ~bc, then c =
    a. 3/4Ab
    b. 4A/3b
    c. A/3b
    d. 3/4bc
    e. 4b/3A

37. A plane cross section of a ractangular block can have any of the following shapes except one, which is it?
    a. O
    b. O
    c. 'Q
    d. C:J
    e. 

38. If 0.09 x N = 900, then N =
    a. 10
    b. 100
    c. 1,000
    d. 10,000
    e. 100,000

39. A and B are any pair of real numbers whose product is 500. If one number is doubled the product remains 500, what *is* the effect on the other number?

a. The other number *is* also doubled
b. The other number is 1/2 its original value
c. The other number is increased by 2
d. The other number *is* decreased by 2
e. The value of the other number remains the same

40. Tips Earned Chart

	Employee				
	Cesar	Bertha	Jim	Pat	Javier
Monday	Sl	S3	S2	S6	S8
Tuesday	8	4	4	5	3
Wednesday	5	3	6	2	1
Thursday	7	8	5	4	3
Friday	4	7	6	3	5

According to the chart, on what day did Javier earn as much in tips as Jim earned on Thursday?

a. Monday
b. Tuesday
c. Wednesday
d. Thursday
e. Friday

Answers - Test 2

I. c
2. d
3. d
4. a
5. b
6. a
7. d
8. e
9. b
10. e
II. a
12. c
13. c
14. c
15. a
16. e
17. a
18. a
19. a
20. e
2I. a
22. b
23. a
24. c
25. d
26. c
27. d
28. b
29. b
30. d
31. d
32. e
33. a
34. c
35. d
36. b
37. b
38. d
39. b
40. e

Answer Key

Test 2

1. A model is made so that 1 millimeter represents 15 meters. How long should the model be to represent 1500 meters?

a. 1mm
b. **10mm**
c. **100mm**
d. **1000mm**
e. **10000mm**

C

2. To completely cover the wall in the closet, 13 feet 7 inches of wall paper is needed. There are 22 feet 3 inches of wall paper in the roll to be used. How much paper will be left after covering the wall?

a. **9ft 6in**
b. **9ft 8in**
c. **8ft 6in**
d. 8ft 8in
e. **9ft** 4in

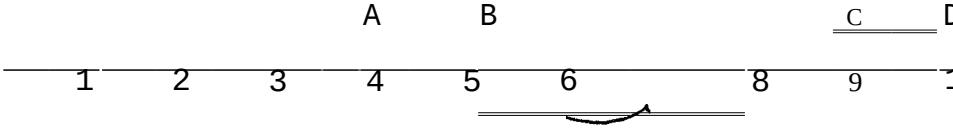
d

3. At a sale Rita bought a coat at 40% off the regular price of $170. Which of the following is a way to determine the sale price of the coat?

a. **40% of $170**
b. **$170 - $40**
c. **$170 - (60% of $170)**
d. **60% of $170**
e. **(60% of $170)- $170**

d

4. Points A, B, C, Dare all on the same line. If AD = 6 and BC = 4, which number line represents a possible arrangement of the points?

a.


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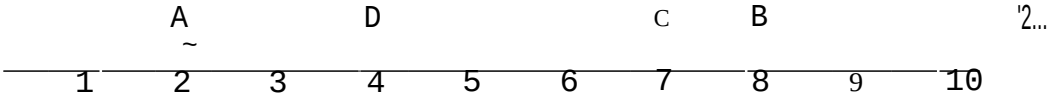
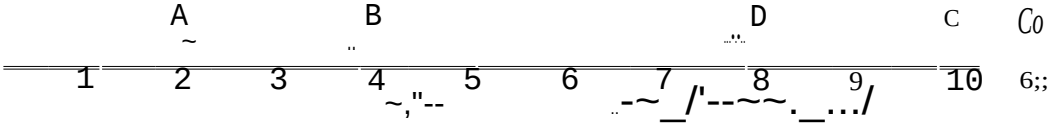
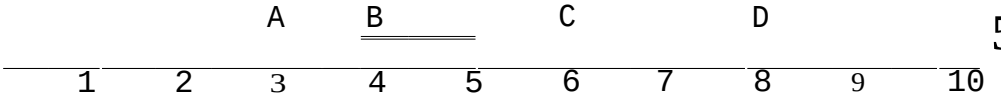
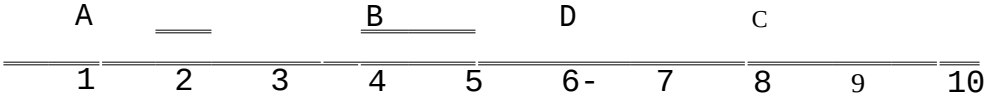


I.


I-


5

J'


6-

5. Bananas are priced at 17 cents each, or 4 for 64 cents. How much is saved per banana by buying 4 bananas?

a. 4 cents
b. 1 cent
c. 16 cents
d. 17 cents
e. 9 cents

or-

b

6. A student claims that when two even numbers are added, the sum consists only of even digits. Which of the following shows that the student is NOT correct?

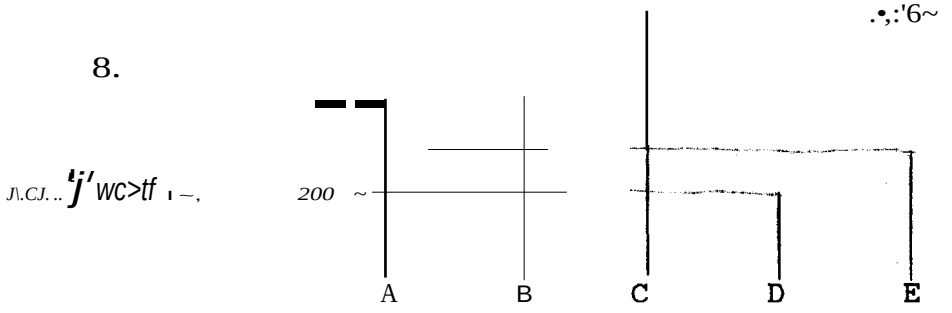
a. 18 + 12 = 30
)(. 17 + 18 = 35
c. 18 + 46 = 64
17 + 27 = 44
e. 18 + 24 = 42

7. Which of the following has the greatest value?

a. (.7 x .4) + 2.1
b. .7 + (.4 x 2.1)
c. .7 x .4 x 2.1
d. .7 + .4 + 2.1
e. (.7 + .4) x 2.1

d

8.



e

In the figure above, if the first line is to represent a weight of 400 grams, which of the others is most likely to represent 300 grams?

a. A
b. B
c. C
d. D
e. E

9. How many 3 square inch tiles fit on a floor that is 18 1/2 inches long 20 inc~es wide?

a. 30
b. 36
c. 41
d. 12
e. 37

b

3 | 18.5 (length) 18 (5)

3 | 20 (width) 18 (2)

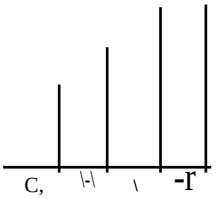
6 x 6 = 36

10. The chart gives data about the distribution of four compact-car models in a company parking lot. Which of the following best represents the given data?

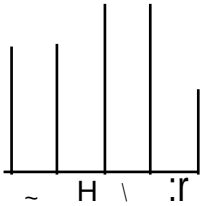
car model	freauencv
G	6
H	4
I	5
J	4

a.

b.



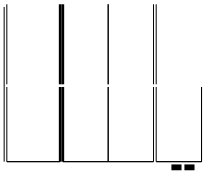
c.



e.

d,

dIb



e

11. $\frac{1}{100} + \frac{1}{1000}$

a. .011
b. .11
c. 1.11
d. .101
e. 1.01

01
+. OO\
. O\\

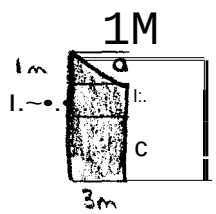
12. A study showed that on average teachers earned 40% more per year than secretaries. If this trend continues, the annual salary of teachers would be what percent greater than that of secretaries after 8 years?

a. 8%
b. 24%
c. 40%
d. 240%
e. 80%

C notice → average earned
→ trend continues
∴ average doesn't change

13. To find the area of the shaded portion of the figure below you need the value of?

a. a only
b. b only
c. c only
d. a and b
e. a and c



C

14.

~~Nicks~~	4	4	
Bulls	3	6	
Bears	4		
Sox	?~		

C

Each of five clubs in one town has a team that plays teams from other towns. Although these teams do not play each other, they rank their teams by the number of games they've won. Ann said, " If the Bulls win their next game, the Sox will be in second place." If Ann is right, which column above could show the number of games each team has won so far?

a. A
b. B
c. C
d. D
e. E

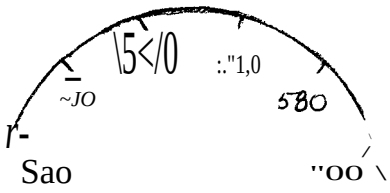
15. A class with 80 students has 60 female students. The ratio between females to males in the class is?

a. 3:1
b. 1:3
c. 2:1
d. 1:2
e. 4:3

80
-(00
LO~

1.90:2.0
Lo "2-0 = 3:\ o,

16.



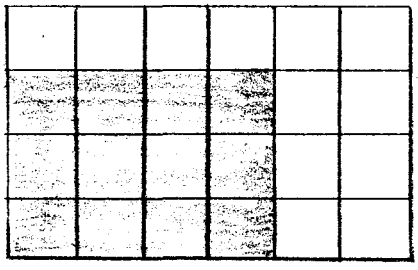
On the scale above, the arrow points to

a. 501 1/2
b. 525
c. 515
d. 510 1/2
e. 530

e.

17. In the figure, the shaded portion is what fraction of region ABeD?

a. 1/2
b. 4/3
c. 2/3
d. 3/4
e. 1/4



12 shaded
24 total

a

18. Which of the following is equal to half a million?

a. 500,000
b. 50,000,000
c. 500,000,000
d. 1
5,000,000
e. 5
1,000,000

57Jo] ooo
c9. I\)ODO, CoG

o.

19. Which of the following could be the weight of an average man?

a. 70 kg
b. 7 kg
c. 1 kg
d. 70 g
e. 70 mg

20. A is 5 more than 4 times B

Which of the following is NOT a way to express the relationship above?

B A-S
~: A: 4B'i= 5
c. 4B + 5 = A
d. A - 5 = 4B
e. 4B - 5 = A

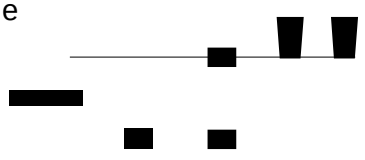
d. K ':.5+\.\~
f\ -S:: '5 -5 ::.l\f)
f\-s':.L\~

21. Each of five people earned one of the commissions shown below in one day. Which is the greatest?

a. 5% of $900
b. 11% of $300
c. 13.5% of $100
d. 19% of $100
e. 25% of $60

22. What is the perimeter, in centimeters, of the rectangle shown?

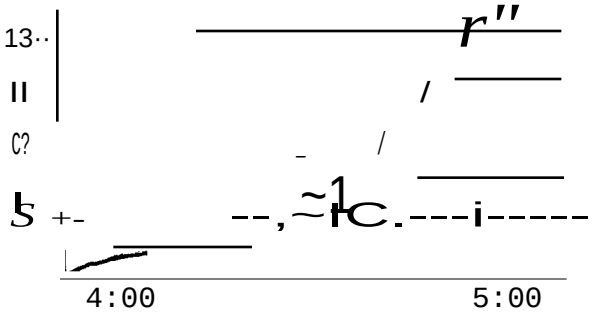
a. 20.2
b. 31
c. 15.5
d. 57
e. 21. 5



9.5cm

Perimeter = 2L + 2w

23.



According to the graph, approximately how high was the snow at 4:40?

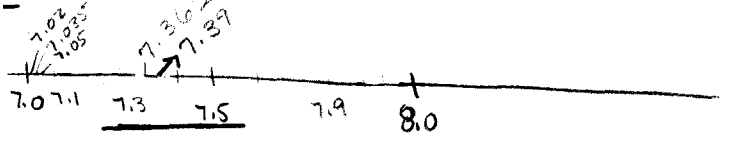
a. 7 inches
b. 11 inches
c. 9 inches
d. 6 inches
e. 1 foot

24. Three students are taking a test. Each student can answer 7 to 9 multiple choice questions, 4-8 short answer questions, and 6-9 fill in the blank. The minimum and maximum number of questions, respectively that a student can answer are

a. 4 and 9
b. 6 and 8
c. 17 and 26
d. 4 and 43
e. 17 and 43

25. 7.39 is between

a. 7.Ooand 7.3·)
b. 7.02 and 7.05
c. 7.8Qand 8.9;J
d. 7.30and 7.5~
e. 7.035 and 7.362



26.

x	y
0	7
3	19
6	31
9	43
10	47

Which of the following formulas expresses the relationship between x and y in the table above?

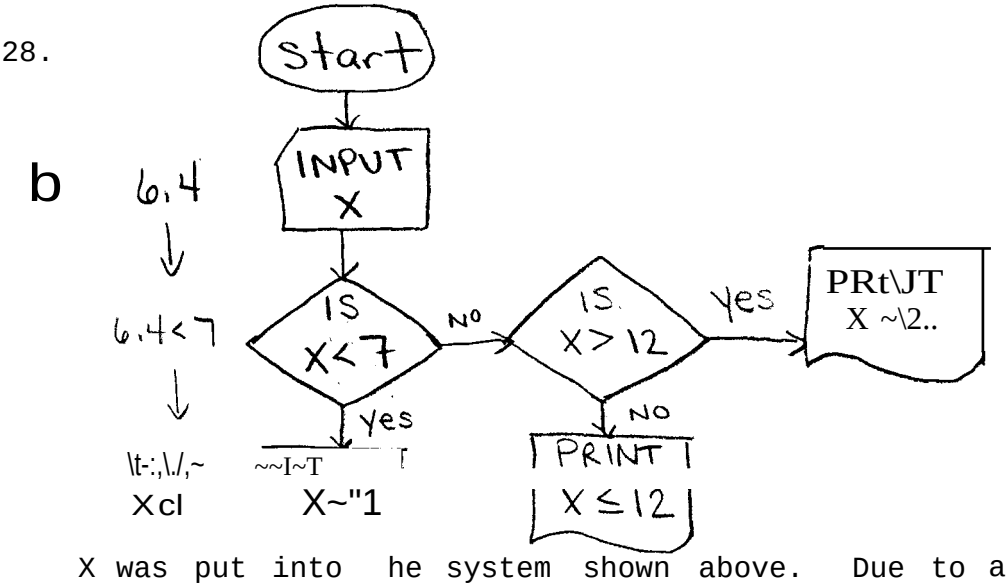
a. y=x+6
b. y = x + 7
c. y = 4x + 7
d. y = 4x - 6
e. y = x - 7

27. It took Jen 6 hours to drive from A to B when she averaged 60 miles per hour. Pulling a trailer on the return trip from B to A she averaged 40 miles per hour. How long did her return trip take?

a. 4
b. 7
c. 8
d. 9
e. 10

360 miles / 40 mph = 9 hrs d

28.

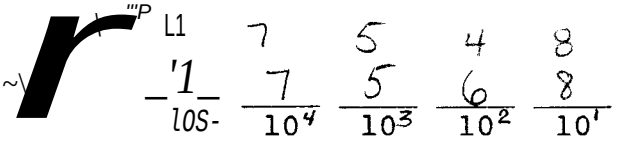


b 6.4 → 6.4<7 → X~"1

X was put into he system shown above. Due to a printing malfunction, all that appeared on the printout was" X 12". Which of the following statements about N must be false?

a. X could have been 9
b. X could have been 6.4
c. X could habe been 11
d. X could have been 9.85
e. ~ could have been 8.63

29.



All of the digits 4, 5, 6, 7, 8, and 9 are used to fill in the display above. The digits 6 and 4 are both in positions adjacent to the 8 which is in the 10' position. The digits 7 and 9 are in positions that are next to each other. The digit 5 is to the right of the digit 7. Which of the following need not b~ ~ru~?

a. The thousands' digit is the 5
b. The digits 4 and 5 are in adjacent positions
c. The number formed is an even number
d. The number formed is greater than 900,000
e. The numbers 8 and 4 are in adjacent positions

b. may not be true

30. | Some values of X are more than 100 |

Which of the following is not consistent with the sentence above?

a. 285 is a value of X
b. Some values of X are less than 100
c. Some values of X are more than 100
d. No numbers more than 100 are values of X
e. 108 is not a value of X

d - ~iQ:r.'-_C'A±· ~~+J\.*

X: 100

31. If a finger was measured in millimeters, the length expressed in centimeters would be

a. twice as great
b. half as great
c. ten times as great
d. one-tenth as great
e. one-thousandth as great

rn dl'Y'. c.m M'N'o.. IOOO()\ •...••: IQOc.yy..
\ 10 100 1000 Or 10 t"V\M: \ ~m.

~1-p),d:J.'";9-d

u.re-u1.d. I>z

d

32. Which of the following fractions is the least?

a. 12/11=1-h
b. 900/899-=-\~
c. 4/3 =. \ 1/3
d. 60/59=\'/S-q
e. 88/89::'.9'1

e – only answer that is less than 1

33. Two dice are thrown in a certain board game to determine the number of spaces to move. One player throws the dice and the same number comes up on each of the dice. What is the probability that the sum of the two numbers is 7?

a. 0
b. 1/6
c. 1/2
d. 1
e. 1/12

a → two die rolling the same # cannot equal 7 or any odd #

34. IF A -:10 = Q, then A . 20 =

a. 20Q
b. 2Q
c. Q ' 2
d. Q 10
e. Q 7 20

!l'~Q
10

$\frac{A}{10}\left(\frac{1}{2}\right) = Q\left(\frac{1}{2}\right)$

$= \frac{A}{20} = \frac{Q}{2}$

~~. ud.-UL~-tf'''' A

d.-O-;- 10 -: ~ ~O-7 £)0 --\

~O-7\O-;..L\ 40-7;:;;0 -.~,,'

ca,-", ALf +/v:ct

fl7 JD~Q -71

$\frac{2}{2} = 1 \quad \frac{4}{2} = 2$

35. When Bob was calculating the amount of wood to buy for work, he accidentally divided by 3 when he should have multiplied by 3. The answer he got was 96. The correct answer should have been?

a. 288
b. 32
c. 13
d. 864
e. 18

$\frac{x}{3} = 96$ $\quad \frac{x}{3} \times 3 = 96 \times 3 \quad x = 96 \times 3 = 288$

d

36. If A, b, and c are positive numbers and $A = \frac{3}{4}bc$, then c =

a. 3/4Ab
b. 4A/3b
c. A/3b
d. 3/4bc
e. 4b/3A

$A = \frac{3}{4}bc \quad \frac{4a}{3b} = c$

b

37. A plane cross section of a ractangular block can have any of the following shapes except one, which is it?

a.
b.
c.
d.
e.

b. can't possibly get a circle out of a rectangle (by cross section)

38. If 0.09 x N = 900, then N =

a. 10
b. 100
c. 1,000
d. 10,000
e. 100,000

$0.09N = 900$

$N = 100$

or $\frac{.09}{1\ 2\ 3\ 4} = 10{,}000$

$.09\overline{)900}$ $\quad \frac{10000}{900}$

d

39. A and B are any pair of real numbers whose product is 500. If one number is doubled the product remains 500, what is the effect on the other number?

a. The other number is also doubled
b. The other number is 1/2 its original value
c. The other number is increased by 2
d. The other number is decreased by 2
e. The value of the other number remains the same~

------:>::.,.. ~ $-'ccr d x ~~. =5DO ~ cit; uL'.(1 J1V 'i:j..: " X / ;2~ .: 50 0

0/nCI AJ..ti.. 10)(5'0 :: 6-00 ~;;> d..c--M a»» 44 ~ '1" X ~ L:"';:: L~ [)

b

40. Tips Earned Chart

	Cesar	Bertha	Jim	Pat	Javier
Monday	51	53	52	56	$~\
Tuesday	8	4	4	5	3
Wednesday	5	3	6	2	1
Thursday'	7	8	..[5J	4	3
Friday	4	7	6	3	('5

(Employee)

According to the chart, on what day did Javier earn as much in tips as Jim earned on Thursday?

a. Monday
b. Tuesday
c. Wednesday
d. Thursday
e. Friday

e

Answers - Test 2

I. c
2. d
3. d
4. a
5. b
6. a
7. d
8. e
9. b
10. e
II. a
12. c
13. c
14. c
15. a
16. e
17. a
18. a
19. a
20. e
2I. a
22. b
23. a
24. c
25. d
26. c
27. d
28. b
29. b
30. d
3I. d
32. e
33. a
34. c
35. d
36. b
37. b
38. d
39. b
40. e

Test 3

1. If 18 km equal 12.5 miles, how many kilometers are in 27 miles.
   a. 18.75
   b. 38.88
   c. 2.16
   d. 2.07
   e. 225

2. What is the temperature in cetigrade (C) if the temperature in Fahrenheit degrees (F) is 230? Formula: F = 9/5C + 32
   a. 198
   b. 110
   c. 356
   d. 446
   e. 84

3.

Bill for Purchase	
Blouse	$56
Pants	$42
Dress	$98
Shoes	$35
Total:	$309

Carson's sent this bill to Ann. Although the bill includes the cost of the coat, Carson's forgot to list it on the bill. How much did the coat cost Ann?
   a. $98
   b. $74
   c. $80
   d. $78
   e. $231

4. Ben High School average ACT scores over a 6 year period were:

	Math	Verbal
1984	18	22
1985	23	26
1986	19	27
1987	27	25
1988	28	23
1989	23	29

What was the mean (average) of the math ACT scores for the five year period 1985-1989?

a. 26
b. 24
c. 22
d. 25
e. 23

5. Bob knows that a geometric figure is a parallelogram and that it has the sides of 13 and 19.

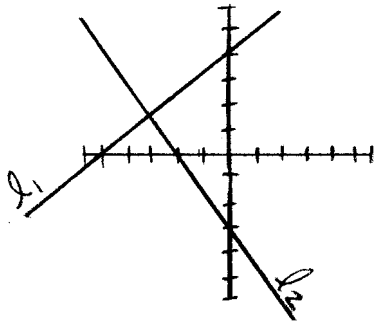
How can Bob compute the area of a square that has the same parimeter as the parallelogram above?

a. Add twice 13 to twice 19, divide by 2, then square the quotient
b. Add 13 and 19, double this sum, divide by 4, then square the quotient
c. Add 13 and 19, double the sum, divide by 4, then multiply by 2
d. Add 13 and 19, double this sum, divide by 4, then multiply by 4
e. Add 13 and 19, double this sum, then multilpy by 4

6. Gina puchases a book, a school bag, a calculator, and a desk lamp. The book and the school bag each cost two times what the desk lamp costs. The calculator cost two times what the school bag costs. If Gina paid a total of $270 for all four items, what was the price of the book?

a. $30
b. $33.75
c. $60
d. $60.50
e. $78

7. In the graph below, what is the solution of the equations of two lines l1 and l2?



a. x=-2; *y=5*
b. x=2; *y=-3*
c. x=-3; *y=2*
d. x=-5; *y=3*
e. undetermined

8. Fred is just 6 years younger than Lisa. The total of their ages is 38. What is the equation for finding Lisa's age?
a. 6x - x = 38
b. x - G = 38
c. x + (x-G) = 38
d. 2x + (x-G) = 38
e. x - 6x = 38

9. How can Josie compute 30 percent of 80?
a. 30 x 80
b. 80 30
c. 80 3/10
d. 80 x 3/10
e. 80 .30

10.

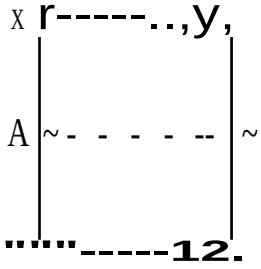


Figure 1

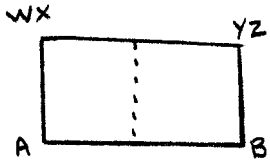


Figure 2

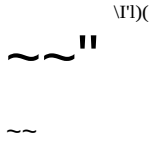
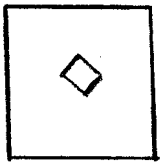


Figure 3

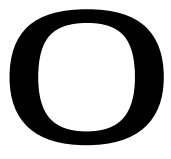
In figure 1 above, a square piece of paper is folded along dotted line AB so that W is on top of X and Z is on top of Y (figure 2). The paper is then folded again so that A is on top of B~nd WX is on top of YZ (figure 3). Two small corners are cut out of the paper as shown in figure 3. If the paper is unfolded, which of the following could be the result?

a.



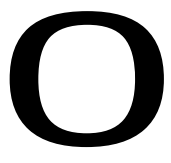
b.

c.



d.

e.



11. If notebooks are on sale for $1.86 for a package of 3 notebooks, how much change will Chris receive from a fifty dollar bill if she purchases 18 notebooks?

a. $8.84
b. $29.03
c. $38.84
d. $20.97
e. $16.52

12. All of the following are equal to the equation 2 1/2 + 6x = 5x + 3 except?
    a. 2.5 - 3 + 6x = 5x
    b. x = .5
    c. 2.5 = -6x + 5x + 3
    d. Ix = 2 1/2 - 3
    e. 2.5 - 3 = -6x + 5x

13. Which of the following is the largest?
    a. 6/13
    b. 9/23
    c. 2/5
    d. 18/31
    e. 22/45

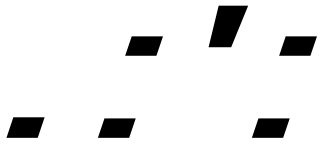
14. 6,300,000 e~uals
    a. (6 x 10) + (3 x 10^{k})
    b. (6 x lOS) + (3 x 10^{5})
    c. (6 x lOs-) + (3 x 10^{to})
    d. (6 x 10~) + (3 x lOS)
    e. (6 x 10E.) + (3 x 10~)

15. children Adopted

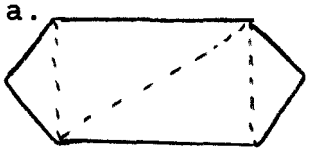
Age	Number
1-2	1630
3-4	1500
5-6	1330
7-8	1000
9-10	700

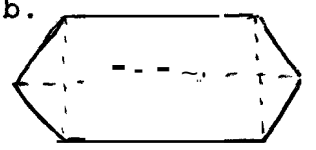
According to the chart, how many more children from 1-5 years old were adopted then those 7-10 years old?
    a. 630
    b. 2095
    d. 2760
    e. 930
    f. cannot be determined

16. The product of two numbers is less than one and equals one of the numbers. Which of the following must be one of the numbers?
    a. an odd #
    b. 0
    c. 1
    d. a prime number
    e. a reciprical

17. 

The best way to compute the area of the figure above would be to break it which of the following ways?

a. 

b. 

c. 

d. 

e. 

18.

Candy Bars cost $.70 each. SAC sells them for 1.15 each

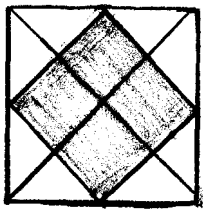
Based on the above information, how could Amy determine how many candy bars must be sold (Q) to make a profit of $39.60?

a. Q = $1.15 - S.7Q
b. Q = $39.60 $.70
c. Q = $39.60 $.45
d. Q = $39.60 - $.70
e. Q = $39.60 + $1.15 - $.70

19. Round off 8476.39273 to the nearest thousandth.

a. 8476.392
b. 8476.39273
c. 8476.393
d. 8000
e. 8476.40

20. John baught 13 pens at 12¢ per pen. To compute the total price he paid, John used 13 x 12¢ = 156. Another simple method to compute the price he paid could've been
    a. (9x12¢) + (lx12¢) + (2x12¢) + (lx12¢)
    b. (13x10¢) + (13x12q:)
    c. (10x12¢) + (3x12¢)
    d. (13x15) - 3(:
    e. (8x6¢) + (7x6¢)

21. 

    The large square consists of squares and isoscelese right triangles. If the large square has a side of 8cm, then the area of the shaded portion in the square cm is
    a. 32
    b. 8
    c. 4
    d. 16
    e. 64

22. Juan approximated 25 and 35 as 20 and 30, but the answer was much too low. To get a better approximation he should
    a. 30 x 40
    b. 20 x 40
    c. 30 x 35
    d. 40 x 40
    e. 20 x 25

23. If 54 out of 900 people polled buy encyclopedias, what percent of the people polled buy encyclopedias?
    a. 16
    b. 6
    c. 90
    d. 60
    e. 5

24. Twelve parents are being assigned to teacher's helper duty one month of a year during a 12 month school year. If all the months of a year are tossed into a box (January through December) and each parent chooses a month, what is the probability that the first parent will randomely select a summer month (June through August)?

a. 1/2
b. 1/4
c. 1/12
d. 1
e. 3/8

25. "' \ \ \ ı \ \ \ I \ , , \ \ \ \ , , \ " ,

."8 ~

On the number line above, what is the point 8 units to the right of R?

a. 3
b. -12
c. 0
d. -5
e. -2

If the product of two numbers is of the two numbers, which of the the relationship?

a. AB = A + B 9
b. AB = A - B + 9
c. AB = A + B + 9
d. A(B) + 9 = A + B
e. 9AB =A + B

27. Which of the following is determined by division

I. how many dozen books in the total number of books in 3 cases
II. the sum of the prices of 2 shirts
III. the number of cookies sold if the number is four times the number of sodas sold

a. I
b. II
c. III
d. I and II
e. I and III

28. Cars in a lot: + + + + + + + +
+ + + + + + +

According to the graph above, how many cars are in the lot? (Key: each + + + = 20 cars)
+ + +

a. 15
b. 60
c. 50
d. 43
e. 40

29. A puppy is selling at 20\ off of its tagged price. It's tagged price is $230. What is the new selling price?
a. $46
b. $210
c. $130
d. $184
e. $190

30. Joe's car averages 28 miles per each gallon of gasoline. Assuming Joe is able to maintain his average miles per gallon, how far can he drive his car on 18 gallons of gas?
a. almost 2 miles
b. 10 miles
c. 280 mi Ies
d. 46 miles
e. 504 miles

31. A rectangle has two sides of dimensions 6 and 4. What would be the side of a square with the same perimeter?
a. 6
b. 4
c. 5
d. 25
e. 20

32. It is estimated that at a party each child will drink 1/7 of a gallon of juice. How many gallons of juice should be brought to a party if 32 people, all children, are expected to attend?
a. 3
b. 4
c. between 4 and 5
d. between 5 and 6
e. more than 6

33. If Mary can sew 248 buttons in 5 hours, how many buttons can she sew in 11 hours?
    a. 49.6
    b. 545.6
    c. 4.5
    d. 1240
    e. 700

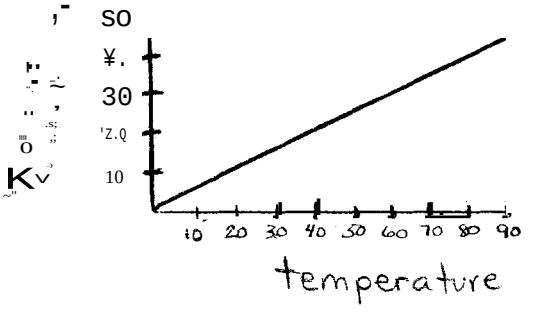
34. Andrea purchased 17 apples at 18¢ each, then bought 13 oranges, also at 18~ each. What would be the simplest way to compute the total amount spent?
    a. 17 x 18¢ + 10 x 18¢ + 3 x 18¢
    b. 17 x 13 x 18¢
    c. 180¢ x 30
    d. 30 x 18¢
    e. 17 + 18~ + 13 x 18

35. In a classroom, Jean had 3 times as many books as Rick, Yoli has 6 less books than Jean, and Cesar has 3 more books than Rick. If the total number of books is 21, how many books does Cesar have?
    a. 7
    b. 4
    c. 9
    d. 3
    e. 6

36. Ken cut a yardstick into 3 pieces, two pieces are the same size and the larger piece is 3 inches larger than the 2 smaller pieces. How could Ken compute the size of the smaller pieces x?
    a. x + x + 3 = 36
    b. x + 3 = 36
    c. 3x + 3 = 36
    d. 3x - 3 = 36
    e. 3x = 36

37. According to the graph, if the temperature rises 35 degrees, what percentage will sunbathing increase?

a. 20
b. 40
c. 30
d. 35
e. 45

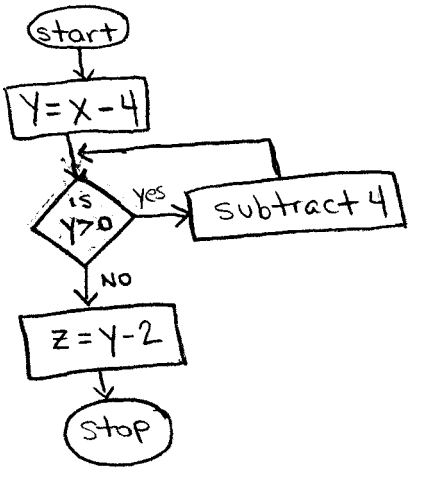


38. Lety needs to compute 16% of 63. To get the correct answer, all of the following will work except

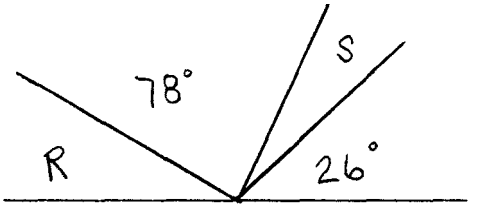
a. 16/100 x 63
b .. 16 x 63
c. 63 -7 100/16
d .. 63 x 16
e. 63 7 16/100

39. In the flow chart, if x = 7, then what is the value of z?

a. 1
b. -3
c. -1
d. 3
e. -5



40.



In the figure above, what is the number of degrees in the sum Rand 5?

a. 24
b. 76
c. 80
d. 256
e. Cannot be determined

Answers - Test 3

1. b
2. b
3. d
4. b
5. b
6. e
7. e
S. e
9. d
10. e
11. e
12. d
13. d
14. d
15. e
16. b
17. e
IS. e
19. e
20. e
21. a
22. b
23. b
24. b
25. a
26. b
27. a
2S. e
29. d
30. e
31. e
32. e
33. b
34. d
35. e
36. e
37. a
3S. e
39. b
40. b

Answer Key

Test 3

1. If 18 km equal 12.5 miles, how many kilometers are in 27 miles.

a. 18.75
b. 38.88
c. 2.16
d. 2.07
e. 225

b

2. What is the temperature in cetigrade (C) if the temperature in Fahrenheit degrees (F) is 230? Formula: F = 9/5C + 32

a. 198
b. 110
c. 356
d. 446
e. 84

3.

Bill for Purchase	
Blouse	$56
Pants	$42
Dress	$98
Shoes	$35
Total:	$309

Carson's sent this bill to Ann. Although the bill includes the cost of the coat, Carson's forgot to list it on the bill. How much did the coat cost Ann?

a. $98
b. $74
c. $80
d. $78
e. $231

56
42
98
+35
231

d

4. Ben High School average ACT scores over a 6 year period were:

	Math	Verbal
1984	18	22
1988	28	23
1989	23	29~

To get an average, add all scores and divide by the number of scores.

What was the mean (average) of the math ACT scores for the five year period 1985-1989?

a. 26
b. 24
c. 22

5. Bob knows that a geometric figure is a parallelogram and that it

How can Bob compute the area of a square that has the same parimeter as the parallelogram above?

a. Add twice 13 to twice 19, then square the quotient
b. Add 13 and 19, double this sum, divide by 4, then square the quotient
c. Add 13 and 19, double the sum, divide by 4, then multiply
d. Add 13 and 19, double this sum, divide by 4, then
e. Add 13 and 19, double this sum, then by 4

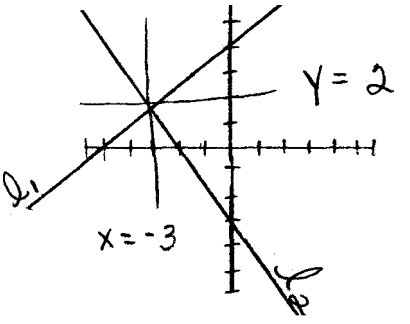
6. Gina puchases a book, a school bag, a calculator, and a desk lamp. The book and the school bag each cost two times what the desk lamp costs. The calculator cost two times what the school bag costs. If Gina paid a total of $270 for all four items, what was the price of the book?

a. $30
b. $33.75
e. $78

book = 2x = $60 → C

7. In the graph below, what is the solution of the equations of two lines land 1 ?

a. x=-2; y=5
b. x=2; y=-3
c. x=-3; y=2
d. x=-5; y=3
e. undetermined



x = -3; y = 2 → C

8. Fred is just 6 years younger than Lisa. The total of their ages is 38. What is the equation for finding Lisa's age?

a. 6x - x = 38
b. x - 6 = 38
c. x + (x-6) = 38
d. 2x + (x-6) = 38
e. x - 6x = 38

Frecl > L../ sa - to
LI:Sa. + LI Sc. - ~:; 3B LIsa .: X
X + X -LD :: -3'2> ~ C0

9. How can Josie compute 30 percent of 80?

a. 30 x 80
b. 80 30
c. 80 3/10
d. 80 x 3/10
e. 80 .30_

30'Yo r{ 80

3a "to ~ . 3 Gr I~)

·3 't ~D -7 d

10.

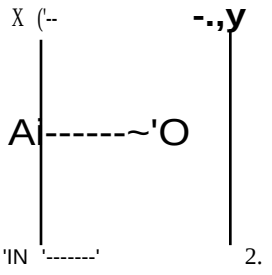


Figure 1

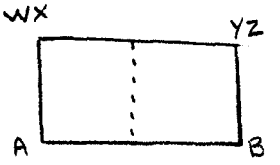


Figure 2

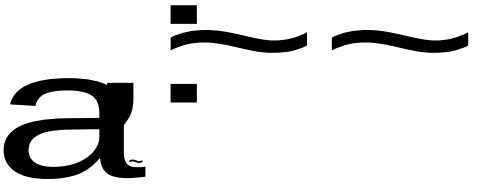
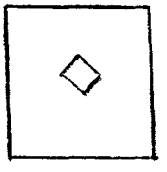


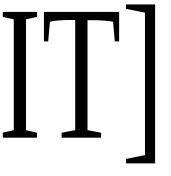
Figure 3

In figure 1 above, a square piece of paper is folded along dotted line AB so that W is on top of X and Z is on top of Y (figure 2). The paper is then folded again so that A is on top of B.and WX is on top of YZ (figure 3). Two small corners are cut out of the paper as shown in figure 3. If the paper is unfolded, which of the following could be the result?

a.

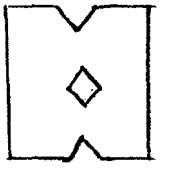


b.



c.

d.



e.

Take a piece of paper and follow the directions above. You will see that e is the answer.

11. If notebooks are on sale for $1.86 for a package of 3 notebooks, how much change will Chris receive from a fifty dollar bill if she purchases 18 notebooks?

a. $8.84
b. $29.03
c. $38.84
d. $20.97
e. $16.52

18 notebooks = $\frac{18}{3}$ = 6 packages

cross multiply and divide

$1x = 1.86(6)$

3) change ~50.00
-11.16
$38.84 → C

d.t+iox -:Sx+ 3 ~ ~.5;'lp)(= 5J+3

o. 0l.5-3+Glx:5x

d.d..d 3 +v L~ ~

"/'\ 0(.5- 3 + ':, + i..ll')(~ 5x + 3

~ .5+ lcx > S'A+3 ~~

b. X =.5 2.5+6=5x+3
subt 2.5 from both sides
2.5-2.5+6=5x+3-2.5
6=5x+3-2.5
subt 5 from both sides
6-5x=5x-5x+3-2.5
6-5x=3-2.5
1x=.5 same

12. All of the following are equal to the equation ~2 1/2 + 6x = 5x + 3 except?

a. ;:: -53 + 6x = 5xC. ~ ,5+ lDx :. lS.x: 4- 3. '

~: 2.5 ~ -6x + 5x + 3

d. Lx = 2 1/2 - 3

e. 2.5 - 3 = -6x + 5x

~lsJx~.11';-!~~2

~,5-+G:i-lox:' I,PX'I-;:,;X't';,.>

8,.'"\ ir_ -Lv x..J: je!..)(+"?-' .QEVW' JL.

d. ;)..5+ \g)("; '5)(.\ ::. .

~...a..(:t a. 5 ~.,- •.. \:'~;l.k.(>,tL_""

Q •"5 - -a .5" ;- ~)("; 5.)(.;. "3- ;:;), 'S

lDx :.-sx-l-3-~.'S

~.O(..--t S-x fS0-y" h~iJ.. ",.~

lP'X-5", "'=:.)(-'5)(+-;., <~.·3

tox-IQx:: 3-:{.5

~"-/:: 4

13. Which of the following is the largest?

a. 6/13:·4lD <S-

b. 9/23=.3'l <S

c. 2/5=.1..\~5"

d. 18/31:' .~-e> S- d

e. 22/45:..'-/'1 <S-

14. 6,300,000 equals

a. (6 x 10'1) + (3 x lOb)

b. (6 x 10:» + (3 x 105")

c. (6 x 10") + (3 x 10(,,)

d. (6 x lOb.) + (3 x lOs)

e. (6 x lOb) + (3 x 10^{10})

1.0 300000

to' I---)·=-- "" lo x/Oi.a

3'!""="',l.:!..:E .3)(IOS- d

15.

Children Adopted

Age	Number
1-2	1630
3-4	1500
5-6	1330
7-8	1000
9-10	700

According to the chart, how many more children from 1-5 years old were adopted then those 7-10 years old?

a. 630

b. 2095

d. 2760

e. 930

f. cannot be determined

-f. ~)UH_Ou..J .JUJu.) /Ylr..,a../x...f

6-~UlJ\ r;l..cLo ~~ a.,d..QF--t:uI.

16. The product of two numbers is less than one and equals one of the numbers. Which of the follwoing must be one of the numbers?

a. an odd #

b. 0

c. 1

d. a prime number

e. a reciprical

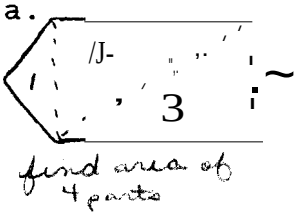
X'l=X

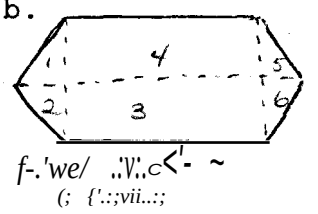
X'l <. 1

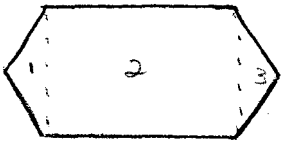
'1(-::.0 -'7 b

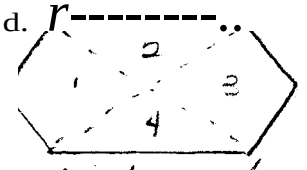
17. 

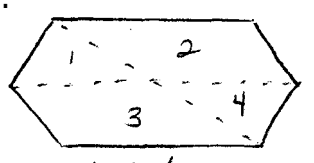
The best way to compute the area of the figure above would be to break it which of the following ways?

a. 

b. 

c. 
C - only have to find the area of 3 parts

d. 

e. 

18.

Candy Bars cost $.70 each. SAC sells them for 1.15 each

Based on the above information, how could Amy determine how many candy bars must be sold (Q) to make a profit of $39.60?

a. Q = $1.15 - $.70
b. Q = $39.60 $.70
c. Q = $39.60 $.45
d. Q = $39.60 $.70
e. Q = $39.60 , $1.15 - $.70

19. Round off 8476.39273 to the nearest thousandth.

a. 8476.392
b. 8476.39273
c. 8476.393

20. John baught 13 pens at 12¢ per pen. To compute the total price he paid, John used 13 x 12¢ = 156. Another simple method to compute the price he paid could've been

a. (9x12¢) + (lx12¢) + (2x12¢) + (lx12¢)
b. (13x10¢) + (13x12¢)
c. (10x12¢) + (3x12¢)
d. (13x15) - 3~
e. (8x6¢) + (7x6¢)

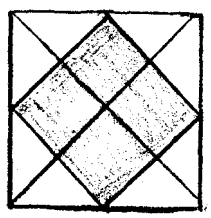
13 = 10 + 3

10 x 12 (in head) = 120

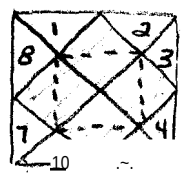
3 x 12 (in head) = 36

C

21.



8cm



~~--\:N.~ .:~~

~~(I-~)

~ ~ +O"H'-l. ~ ~

~~f>~

~~~~~-Vi)(~)~

The large square consist~of s~~celese right triangles. If the large square has a side of 8cm, then the area of the shaded portion in the square cm is

a. 32
b. 8
c. 4
d. 16
e. 64

area of big square: 8 x 8 = 64

$\frac{64}{2} = 32$ area of smaller square (shaded portion) → **a**

22. Juan approximated 25 and 35 as 20 and 30, but the answer was much too low. To get a better approximation he should

a. 30 x 40 1"l..OO
b. 20 x 40 ~co
c. 30 x 35 lOS-o
d. 40 x 40 I~oo
e. 20 x 25 ~-Oo

~O c,-"..d 30 =: !.GoO -"";> +oo lo,-..)

~~d-.~ ~3S-)~lA'> S- .

~OJ\Jt .htJ..l ~ ~ ~ ~

e-b~l~~~'~-lJ -Vf

~(J'r..Jl ~.A. ~ \ ~ ~~~

~.t.o~

-b

23. If 54 out of 900 people polled buy encyclopedias~what percent of the people polled buy encyclopedias?

a. 16
b. 6
c. 90
d. 60
e. 5

~ \OO •.• $\frac{54}{900} \quad \frac{x}{100}$

~ /w.~~ S~ x 100 :: 5'1./00

900 x :: ~.'tq,e

a-cd d",./v.UJ/J 5?06x -:...Slioo ;c;13

900 | 5400 (6)

5400

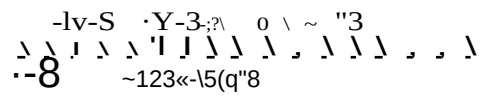
x ~ to -'7 **b**
~~~~~

24. Twelve parents are being assigned to teacher's helper duty one month of a year during a 12 month school year. If all the months of a year are tossed into a box (January through December) and each parent chooses a month, what is the probability that the first parent will randomely select a summer month (June through August)?

a. 1/2
b. 1/4
c. 1/12
d. 1
e. 3/8

June, July, Aug $\frac{3}{12} = \frac{1}{4}$ b

25. ".



-8 ~123«-\5(q"8

On the number line above, what is the point 8 units to the right of R?

a. 3
b. -12
c. 0
d. -5
e. -2

26. If the product of two numbers is 9 more than the difference of the two numbers, which.~the following could represent the relationship?

a. AB = A + B - 9
b. AB = A - B + 9
c. ~ = A + B + 9
d. A\B) + 9 = A + B
e. 9AB =A + B

Ae:: q -r A-B

27. Which of the following is determined by division

I. how many dozen books in the total number of books in 3 cases
II. the sum of the prices of 2 shirts
III. the number of cookies sold if the number is four times the number of sodas sold

a. I
b. I I
c. I I I
d. I and II
e. I and III

T'. -6~I~ -:-3:: ~~

IT, S hI r't- -t0 sh'f't z: 'S1JYh,.

III. X = 4x

28. Cars in a lot: + + + + + + + +
+ + + + + + +

According to the graph above, how many cars are in the lot? (Key: each + + + = 20 cars)
+ + +

a. 15
b. 60
c. 50
d. 43
e. 40

29. A puppy is selling at 20% off of its tagged price. It's tagged price is $230. What is the new selling price?

c. $130
d. $184
e. $190

30. Joe's car averages 28 miles per each gallon of gasoline. Assuming Joe is able to maintain his average miles per gallon, how far can he drive his car on 18 gallons of gas?

a. almost 2 miles
b. 10 miles
c. 280 miles
d. 46 miles
e. 504 miles

gallon / miles

31. A rectangle has two sides of dimensions 6 and 4. What would be the side of a square with the same perimeter?

6
4

a. 6
b. 4
c. 5
d. 25
e. 20

32. It is estimated that at a party each child will drink 1/7 of a gallon of juice. How many gallons of juice should be brought to a party if 32 people, all children, are expected to attend?

a. 3
b. 4
c. between 4 and 5
d. between 5 and 6
e. more than 6

33. If Mary can sew 248 buttons in 5 hours, how many buttons can she sew in 11 hours?

a. 49.6
b. 545.6
c. 4.5
d. 1240
e. 700

buttons / hours $\frac{248}{5}$ x

and divide

$\frac{5x}{5} = \frac{2728}{5}$

34. Andrea purchased 17 apples at 18¢ each, then bought 13 oranges, also at 18¢ each. What would be the simplest way to compute the total amount spent?

a. 17 x 18¢ + 10 x 18¢ + 3 x 18¢
b. 17 x 13 x 18¢
c. 180 x 30
d. 30 x 18¢
e. 17 + 18 + 13 x 18

30 x 18¢

35. In a classroom, Jean had 3 times as many books as Rick, Yoli has 6 less books than Jean, and Cesar has 3 more books than Rick. If the total number of books is 21, how many books does Cesar' have?

a. 9
b. 3
c. 6

3x + 3x - 6 + x + 3 = 21

36. Ken cut a yardstick into 3 pieces, two pieces are the same size and the larger piece is 3 inches larger than the 2 smaller pieces. How could Ken compute the size of the smaller pieces x?

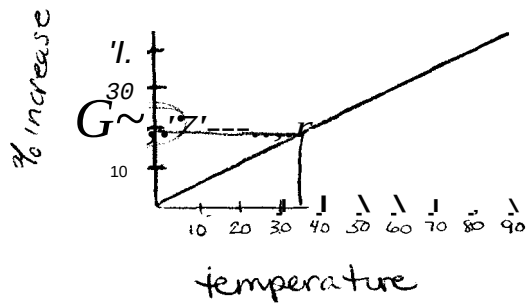
a. x + x + 3 = 36
b. x + 3 = 36
c. 3x + 3 = 36
d. 3x - 3 = 36
e. 3x = 36

x+x+x+3=36

3x + 3 = 36

37. According to the graph, if the temperature rises 35 degrees, what percentage will sunbathing increase?

a. 20
b. 40
c. 30
d. 35
e. 45



0.

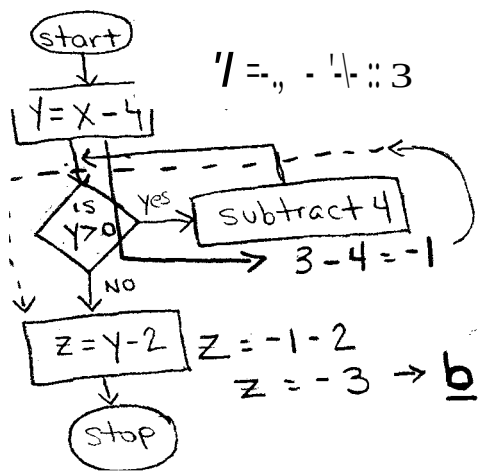
38. Lety needs to compute 16% of 63. To get the correct answer, all of the following will wO,rk exc ept .ltoO-f0ablo3-:. ,\\oYd,o,?>: 10,OS

a. 16/100 x 63~(Ho/loo:' ,\Io).,,\\.o'\(\.O':'!,=.tQ,o'O .<:uvw~
b. .16 x 63::: 10,oB ~~..L
c. 63 .:. 100/16 Ul3';- '-~:;, to '3 x ~ 100 ':. *i» ~)(* ,1(.0"" lo.cı8 ~
d .. 63 x 16 ':\O,o~~-tJ..
e. 63 .;. 16/100:: I- x L!!..Q.. - 1.0"300 ~ .2q" 5 J.I

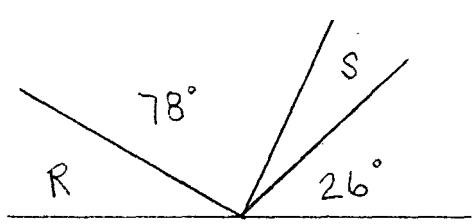
e I~/ A .j iDA.Mct"" """U() ~

39. In the flow chart, if X = 7, then what is the value of z?

a. 1
b. -3
c. -1
d. 3
e. -5



40.



In the figure above, what is the number of degrees in the sum Rand 5?

a. 24
b. 76
c. 80
d. 256
e. Cannot be determined

78
+26
104

b

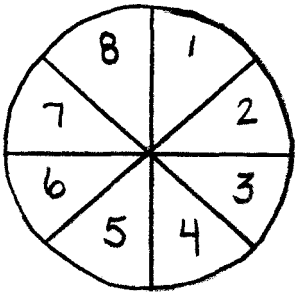
Answers - Test 3

1. b
2. b
3. d
4. b
5. b
6. c
7. c
8. c
9. d
10. e
11. c
12. d
13. d
14. d
15. e
16. b
17. c
18. c
19. c
20. c
21. a
22. b
23. b
24. b
25. a
26. b
27. a
28. c
29. d
30. e
31. c
32. c
33. b
34. d
35. e
36. c
37. a
38. e
39. b
40. b

Test 4

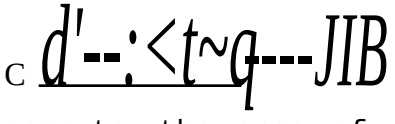
1. Which of the following fractions is the smallest?
   a. 7/13
   b. 26/52
   c. 3/5
   d. 5/11
   e. 17/33

2. From the diagram of the spinner, in spinning the spinner only once, what is the probability of spinning a number 3 through 7?
   a. 1/8
   b. 3/8
   c. 5/8
   d. 1
   e. 1/2



3. If 8 1/4 feet equals 1 banner, how many inches are in 6 banners?
   a. 49.5
   b. 594
   c. 99
   d. 495
   e. 14.25

4.

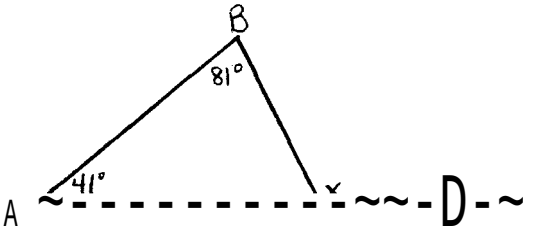


To compute the area of this figure, one would use
   a. 9 x 7
   b. 9 x 6
   c. 18 + 14
   d. 12 + 18
   e. 9 X 6 X 7

5. All of the following ratios are equal except
   a. 1 to 3
   b. 2 to 6
   c. 9 to 27
   d. 12 to 38
   e. 15 to 45

6. Which of the following could be expressed by the following number sentence? 86:34 - 18.22 = 68.12
   a. the average cost of 2 blouses
   b. the total amount of money paid for shoes and a shirt
   c. 68.12 is the result of subtracting 18.22 from x
   d. the total amount received by a class of 4 students at 17.03 per student
   e. the average cost of 2 houses

7.



Given ABC with A = 41 and B = 81 , find the measure of X in degrees
   a. 41
   b. 82
   c. 122
   d. 129
   e. 51

8. If Juan works 9 hours and receives $4.25 per hour and Mary works 8 days and receives a total of $98, which of the following cannot be derived from the above statement?
   a. Mary's wage per hour
   b. the difference received between Mary and Juan
   c. the number of hours Juan worked
   d. Juan's total
   e. the average total received by Juan and Mary

9. If 9a = b, then a =
   a. b + 9
   b. b 9
   c. 9b
   d. 1/9b
   e. (1 + b)/9

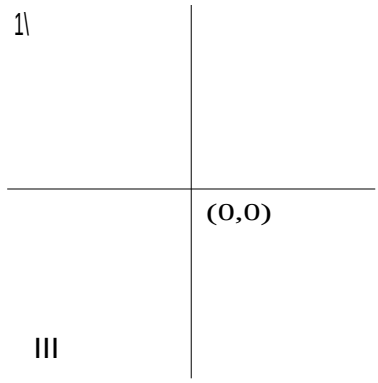
10. On a graph, 1 millimeter represents 18 hectometers. Two points 162 hectometers apart would be represented on the graph by how many millimeters?
   a. 9
   b. 144
   c. 180
   d. 11
   e. 7

11. Round off to the nearest hundredth: 942.896
   a. 900
   b. 1000
   c. 942.90
   d. 942.89
   e. 942.91

12. Which of the following is a prime number?
   a. 27
   b. 18
   c. 143
   d. 29
   e. 93

13. The fraction 1/9 is between the numbers listed in which of the follwing pairs?
   a. 1/11 and 2/13
   b. .17 and .19
   c .. 01 and .16
   d. .2 and .6
   e. 1/10 and 2/11

14. In the coordinate graph, the point represented by (3,4) would be found in which quadrant?

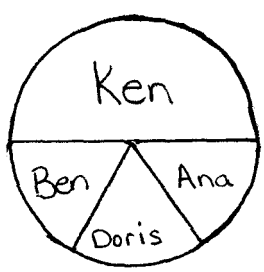


a. I
b. II
c. III
d. IV
e. cannot be determined

15. A class of students all together have 40 books. All of the following may be true except?
a. some students have only 1 book
b. every student has 2 books
c. the class averages 2 books per student
d. each student has 3 books
e. some students have more books than others

16. A man purchase 6 pounds of candy priced at $2.18 per pound. How much change did he receive from a twenty dollar bill?
a. $13.08
b. $11.82
c. $6.92
d. $7.92
e. $6.88

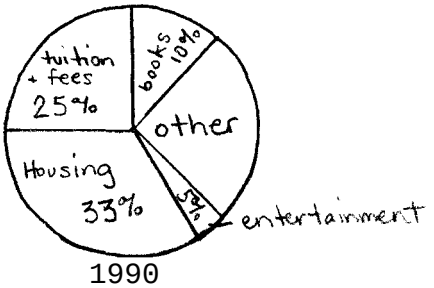
17.



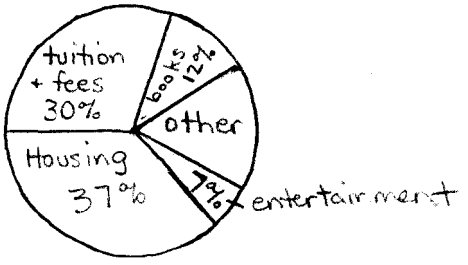
Mrs. Valle tries to construct a pie graph representing A's given out to students. From a total of 48 A's given, 24 were given to Ken, 8 were given to Ben, 12 were given to Ana, and 4 were given to Doris. Mrs Valle realizes that the graph shown above is not correct. In order to fix the graph, Mrs Valle should
a. increase Ken's amount and decrease Ana's
b. increase Doris' amount and decrease Ben's
c. decrease Ana's amount and decrease Ben's
d. decrease Doris' amount and increase Ana's
e. decrease Doris' amount and increase Ben's

18. If C is between A and B on AB, which of the following is not true?
   a. AC + CB = AB
   b. AC = AB - BC
   c. BC = AB - AC
   d. AB + AC = CB
   e. AB = BC + CA

19. <u>Average Student Expenses</u>



1990
Average Cost NIU $8000



1995
Average Cost NIU$10000

How much more money did the average student spend on housing expenses in 1995 than in 1990?
   a. $800 - 900
   b. 900 - 1000
   c. 1000 - 1100
   d. 1100 - 1200
   e. 1200 - 1300

20. What was the approximate increase from 1990 to 1995 in the percentage spent on entertainment?
   a. 5%
   b. 2%
   c. 7%
   d. 10%
   e. 9%

21. In a league of 600 players, only 360 decided to attend the league awards reception. What percent of the league attended the awards reception?
   a. 50%
   b. 20%
   c. 80%
   d. 30%
   e. 60%

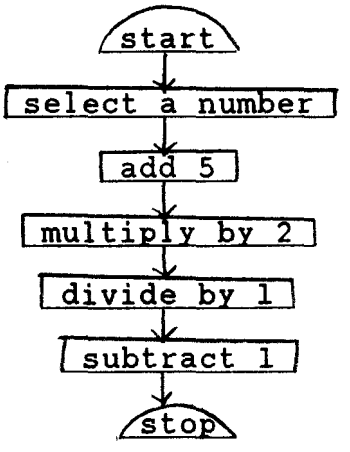
22. What is the probability of tossing a penny 3 times so that it lands tails up all three times?
    a. 1/3
    b. 1/5
    c. 1/2
    d. 1/8
    e. 1/9

23 .. 065 is how many times smaller than 65,OOO?
    a. 10,000
    b. 100,000
    c. 1,000,000
    d. 10,000,000
    e. 100,000,000

24. A purse that usually cost $240 is on sale for $180. What is the rate of discount?
    a. 20%
    b. 25%
    c. 60%
    d. 75%
    e. 80%

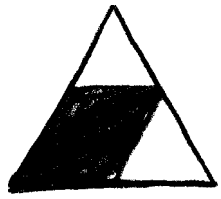
25. In this flow chart, regardless of the number you select, the number at the end is always?

    a. 5
    b. half the original number
    c. the same as the original number
    d. twice the original number
    e. an odd number



26. To change 5 miles into yards, you should
    a. multiply 5 times 12
    b. multiply 5 times 36
    c. multiply 5 times 1760
    d. multiply 5 times 5280
    e. multiply 5 times 12 times 36

27. The shaded region of the equilateral triangle is approximately
    a. 25%
    b. 50%
    c. 70%
    d. 10%
    e. 90%



28. Today is Anne's 20th anniversary at work. Last year, she had worked 4 years more than twice the years Ben had worked at the time. Using B for Ben's years at work now, which of the following can be used to determine how many years Ben has worked now?
    a. 19-4 = 2(B-1)
    b. 20-4 = 2B
    c. 19-4 = 2B
    d. 19+4 = 2b
    e. 19+4 = 2(B-l)

29. Gina has nickles and quarters. She has 5 times as many nickles as quarters. What is the best expression of the amount of money she has in cents if x equals the number of quarters she has?
    a. 50x
    b. 5x(25)
    c. 5(25)
    d. 5x
    e. 25(x+5)

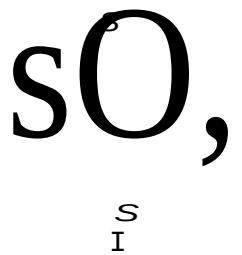
30. Three teachers worked together to write a 15 problem test. If the test has 3 sections and the teachers took 3 hours to write the test, then which of the following must be true?
    I. They wrote an average of 5 problems each.
    II. Each section has 5 problems.
    III. They wrote one section per hour.
    IV. They wrote 5 problems per hour.
    a. I
    b. II
    c. III
    d. IV
    e. I and II

31. 630 times 70 equals A. Therefore 630 times 71 equals
    a. A + 70
    b. A + 630
    c. A + 1
    d. 71A
    e. 630A

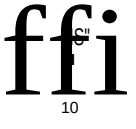
32. A table 72 inches on a side is broken down into smaller tables 18 inches on a side. What is the maximum number of tables that can be formed?
    a. 4
    b. 8
    c. 16
    d. 36
    e. 64

33. A calculator is marked down 30\ to $280. Which of the following equations could be used to determine its original price?
    a .. 30P = $280
    b .. 70P + .30P = $280
    c. $280 - .30 = P
    d .. 70P = $280
    e. P = $280 + .30

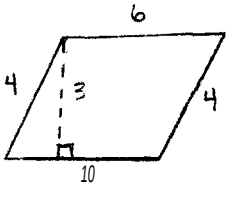
34. The area of which of the following are equal?



I



II

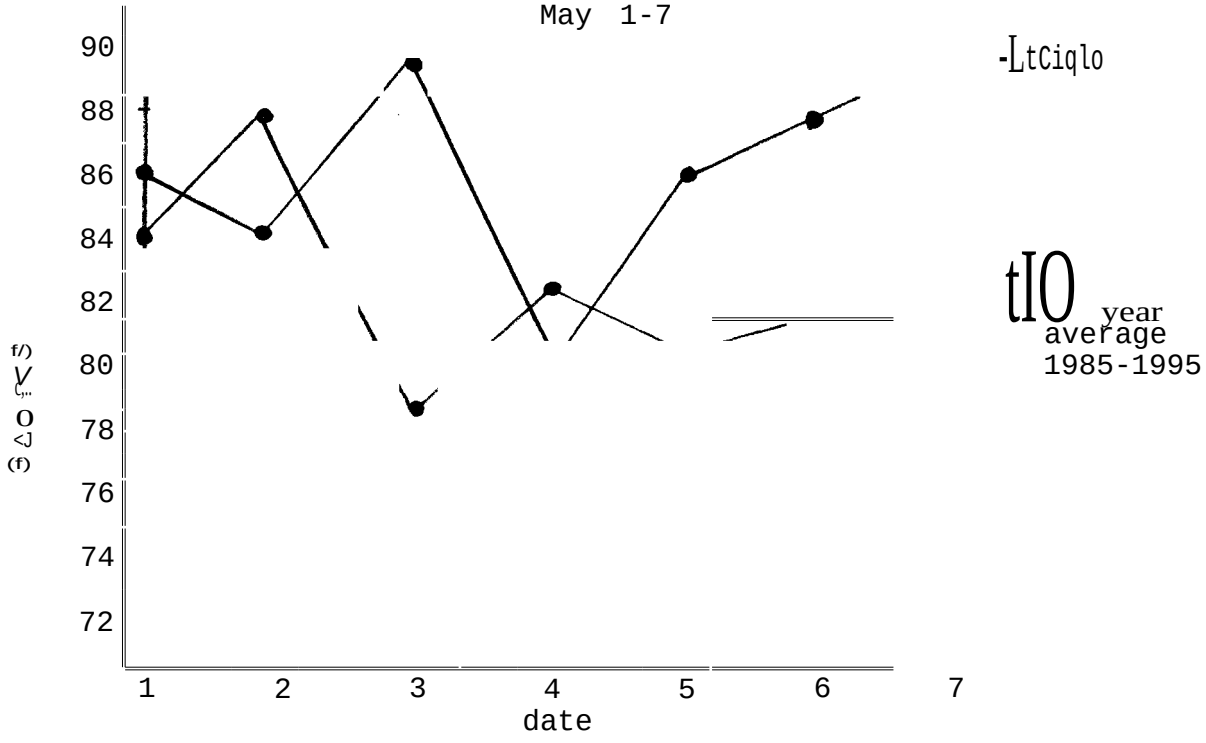


III

    a. I and II
    b. I and III
    c. II and III
    d. I, II and III
    e. none of them are equal

35. Which of the following is the most appropriate unit for describing a piece of wood 3.2 ft long?
   a. km
   b. dm
   c. m
   d. cm
   e. mm

36-37.



36. Of the seven days shown, about what percent of the days did the ~G-%test scores exceed the average test scores?
   a. 3%
   b. 4%
   c. 43%
   d. 71%
   e. 85%

37. Between which two dates shown was the greatest decrease in average scores?
   a. May 1-2
   b. May 2-3
   c. May 3-4
   d. May 4-5
   e. May 5-6

38. When Julio multiplies $x(x+5)$ he gets x^2+5x as an answer. One way to check this answer would be to
    a. divide x by (x+5)
    b. divide (x+5) by 5
    c. square x
    d. square (x+5)
    e. plug in a positive integer for x

39. How many taffy apples were sold at the fair if the 35% of them with peanuts was represented by 70 taffy apples.
    a. 140
    b. 200
    c. 35
    d. 70
    e. 240

40. The product of 2 numbers equals twice the value of one of the two numbers

If the above statement is true, which of the following best represents the relationship?
    a. $a+b = 2b$
    b. $ab = 2b$
    c. $a-b = 2b$
    d. $ab = ab$
    e. $ab = 2$

Answers - Test 4

1. d
2. e
3. b
4. b
5. d
6. e
7. e
8. a
9. b
10. a
11. e
12. d
13. e
14. a
15. d
16. e
17. d
18. d
19. e
20. b
21. e
22. d
23. e
24. b
25. e
26. e
27. b
28. a
29. a
30. a
31. b
32. e
33. d
34. Q
35. e
36. d
37. b
38. e
39. b
40. b

Answer Key

Test 4

1. Which of the following fractions is the smallest?

a. 7/13
b. 26/52
c. 3/5
d. 5/11
e. 17/33

d

a) 13 | 7.00 (.53; 65; 50) B- 1,0 Or >.5

b) 5:Ji""Ql:t,',0S- 300

c.) 5'/3'.: 3c~

d') 11/5:;l

e) 33 in.DO (.51; 110 5; S0; 33) II C

2. From the diagram of the spinner, in spinning the spinner only once, what is the probability of spinning a number 3 through 7?

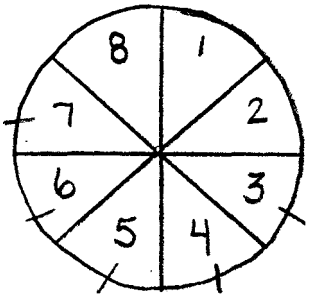
a. 1/8
b. 3/8
c. 5/8
d. 1
e. 1/2

~1 ":#o-b ~')~ ~1~ ~~

(3,4,5,6,7)

(1,;')",:3,"1, S,W\IIS)

5/8 → C



3. If 8 1/4 feet equals 1 banner, how many inches are in 6

b:~ne~~: 5
b. 594
c. 99
d. 495
e. 14.25

/ J.rOJY\,./)UJIw :! IB. ~S" F
t» ~Vr~ ::: 18.atl-
x ≃ <f9·sv F

b

'19.50
Q'1.r0 so ;:;,-1
5"9 '1.00 ~~LQA.>

4. (A~ ,'iA e.G ~ I≃\ -0--'

To compute the area of this figure, one would use

a. 9 x 7
b. 9 x 6
c. 18 + 14
d. 12 + 18
c. 9 X 6 X 7

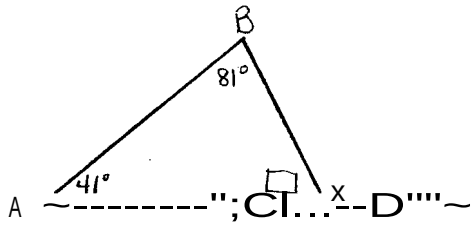
b x h

W2l..O.- - 9 x W -/ b

5. All of the following ratios are equal except
   a. 1 to 3
   b. 2 to 6
   c. 9 to 27
   d. 12 to 38
   e. 15 to 45

d

6. Which of the following could be expressed by the following number sentence? 86.34 - 18.22 = 68.12
   a. the average cost of 2 blouses
   b. the total amount of money paid for shoes and a shirt
   c. 68.12 is the result of subtracting 18.22 from x
   d. the total amount received by a class of 4 students at 17.03 per student
   e. the average cost of 2 houses

7. 

Given ABC with A = 41 and B = 81 , find the measure of X in degrees
   a. 41
   b. 82
   c. 122
   d. 129
   e. 51

8. If Juan works 9 hours and receives $4.25 per hour and Mary works 8 days and receives a total of $98, which of the foll~wing cannot be derived from the above statement?
   a. Mary's wage per hour
   b. the difference received between Mary and Juan
   c. the number of hours Juan worked
   d. Juan's total
   e. the average total received by Juan and Mary

9. If 9a = *b*, then a =
   a. b + 9
   b. b 9
   c. 9b
   d. 1/9b
   e. (1 + b)/9

qQ~b

~C\::6 Q~~ <1 6

('1 q

10. **On a graph, 1 millimeter represents 18 hectometers. Two points 162 hectometers apart would be represented on the graph by how many millimeters?**
   a. 9
   b. 144
   c. 180
   d. 11
   e. 7

model/original = (mm)/(hm) $\frac{1}{18} = \frac{x}{162}$ cross multiply $\frac{162}{\times 1}$ $18x = 162$

and divide $\frac{18x}{18} = \frac{162}{18}$ $18\overline{)162}$ 9 — a

11. Round off to the **nearest hundredth:** 942.896
   a. 900
   b. 1000
   c. 942.90
   d. 942.89
   e. 942.91

tenth hundredth
942.896 ↑ greater than 5 so round up

942.90 → C

12. Which of the following is a prime number?
   a. 27
   b. 18
   c. 143
   d. 29
   e. 93

d o. f/,-„·t ~ .:\:\.-+ 04 only

t\C oLL 'cd;,d 1 i d

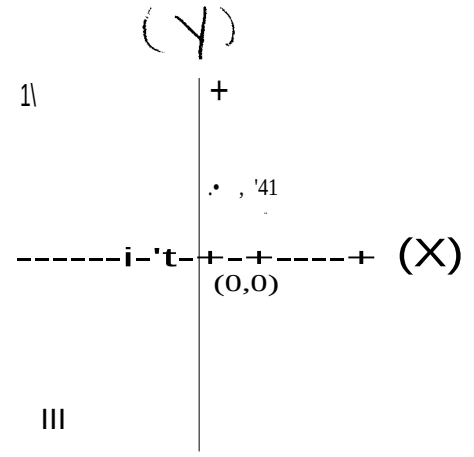
13. The fraction 1/9 is between the numbers listed in which of the follwing pairs?
   a. 1/11 and 2/13
   b. .17 and .19
   c. .01 and .16
   d. .2 and .6
   e. 1/10 and 2/11

"'9:: q \ı o·~·"·

C after converting the given fraction to a decimal look at the options (b, c, d) that are already in decimal form; if you find the answer there you will not waste time by converting answers in fraction form (a and e) into decimals

14. In the coordinate graph, the point represented by (3,4) would be found in which quadrant?

a. I
b. II
c. III
d. IV
e. cannot be determined



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d

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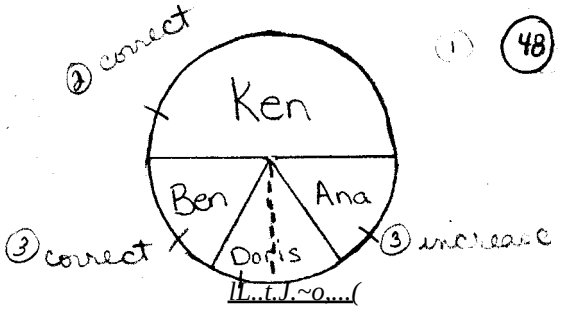
a. $13.08
b. $11.82
c. $6.92
d. $7.92
e. $6.88

$2.18 × 6 = $13.08

$20.00 − $13.08 = C.

17.



② $\frac{24}{48} = \frac{1}{2} \left(= \frac{6}{12}\right)$ are Ken's

③ $\frac{8}{48} = \frac{1}{6} \left(= \frac{2}{12}\right)$ are Ben's

④ $\frac{12}{48} = \frac{1}{4} \left(= \frac{3}{12}\right)$ are Ana's

d

Mrs. Valle tries to construct a pie graph representing A'S given out to students. From a total of 48 A's given, 24 were given to Ken, 8 were given to Ben, 12 were given to Ana, and 4 were given to Doris. Mrs Valle realizes that the graph shown above is not correct. In order to fix the graph, Mrs Valle should

a. increase Ken's amount and decrease Ana's
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a. AC + CB = AB
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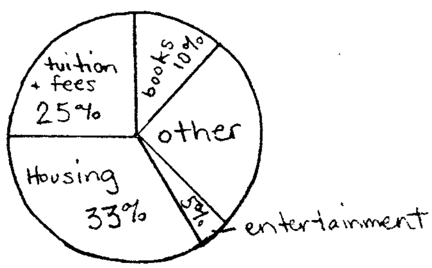
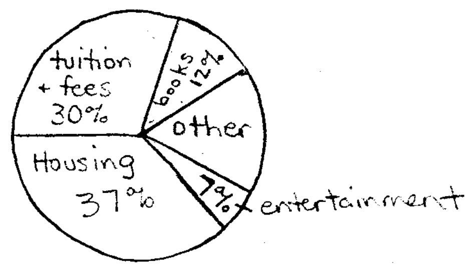
c. BC = AB - AC
d. AB + AC = CB
e. AB = BC + CA

e

19. <u>Average Student Expenses</u>



1990
Average Cost NIU $8000



1995
Average Cost NIU~10000

How much more money did the average student spend on housing expenses in 1995 than in 1990?

a. $800 - 900
b. 900 - 1000
c. 1000 - 1100
d. 1100 - 1200
e. 1200 - 1300

$8000 × .33 = $2640.00

$10000 × .37

determine range in which answer fits

c

20. What was the approximate increase from 1990 to 1995 in the percentage spent on entertainment?

a. 5%
b. 2%
c. 7%
d. 10%
e. 9%

b

21. In a league of 600 players, only 360 decided to attend the league awards reception. What percent of the league attended the awards reception?

a. 50%
b. 20%
c. 80%
d. 30%
e. 60%

cross multiply: 360 × 100 = 36000

and divide 600 ⟌36000 = 60 → e

22. What is the probability of tossing a penny 3 times so that it lands tails up all

a. 1/3
b. 1/5
c. 1/2
d. 1/8
e. 1/9

$\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{8}$ d

23. .065 is how many times smaller than 65,000?

a. 10,000
b. 100,000
c. 1,000,000
d. 10,000,000
e. 100,000,000

24. A purse that usually cost $240 is on sale for $180. What is the rate of discount?

a. 20%
b. 25%
c. 60%
d. 75%
e. 80%

① amount of discount ② % of discount ③ cross multiply

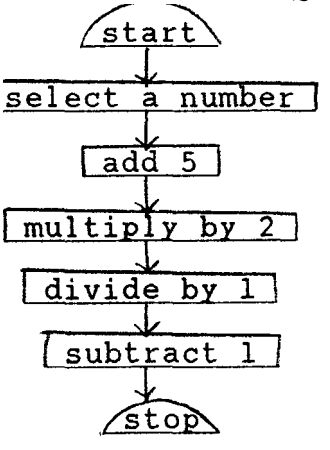
$240 - 180 = 60$

$\frac{15}{100} = \frac{60}{240}$

$240x = 6000$

divide $240 \overline{)6000}$ $= 25\%$

25. In this flow chart, regardless of the number you select, the number at the end is always?



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b. half the original number
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e. an odd number

e

26. To change 5 miles into yards, you should

a. multiply 5 times 12
b. multiply 5 times 36
c. multiply 5 times 1760
d. multiply 5 times 5280
e. multiply 5 times 12 times 36

$\frac{1\ yd}{x}$

$3x = 5280$

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a. 25%
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c. 70%
d. 10%
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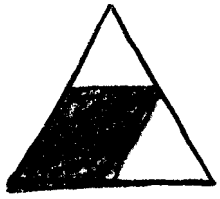
b



28. Today is Anne's 20th anniversary at work. Last year, she had worked 4 years more than twice the years Ben had worked at the time. Using B for Ben's years at work now, which of the following can be used to determine how many years Ben has worked now?

a. 19-4 = 2(B-l)
b. 20-4 = 2B
c. 19-4 = 2B
d. 19+4 = 2b
e. 19+4 = 2(B-l)

29. Gina has nickles and quarters. She has 5 times as many nickles as quarters. What is the best expression of the amount of money she has in cents if x equals the number of quarters she has?

a. SOx
b. 5x(25)
c. 5(25)
d. 5x
e. 25(x+5)

N~ Quarters (x)

51\: 25x

5(5))(25x

dSX. + 25x = 50x

30. Three teachers worked together to write a 15 problem test. If the test has 3 sections and the teachers took 3 hours to write the test, then which of the following must be true?

I. They wrote an average of 5 problems each. - ~
II. Each section has 5 problems.- ~
III. They wrote one section per hour.- .
I:: IThey wrote 5 problems per hour. - ~

b. I I
c. III ()
d. IV
e. I and II

31. 630 times 70 equals A. Therefore 630 times 71 equals
a. A + 70
b. A + 630
c. A + 1
d. 71A
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32. A table 72 inches on a side is broken down into smaller tables 18 inches on a side. What is the maximum number of tables that can be formed?
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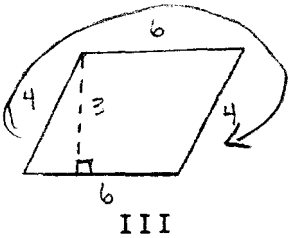


III

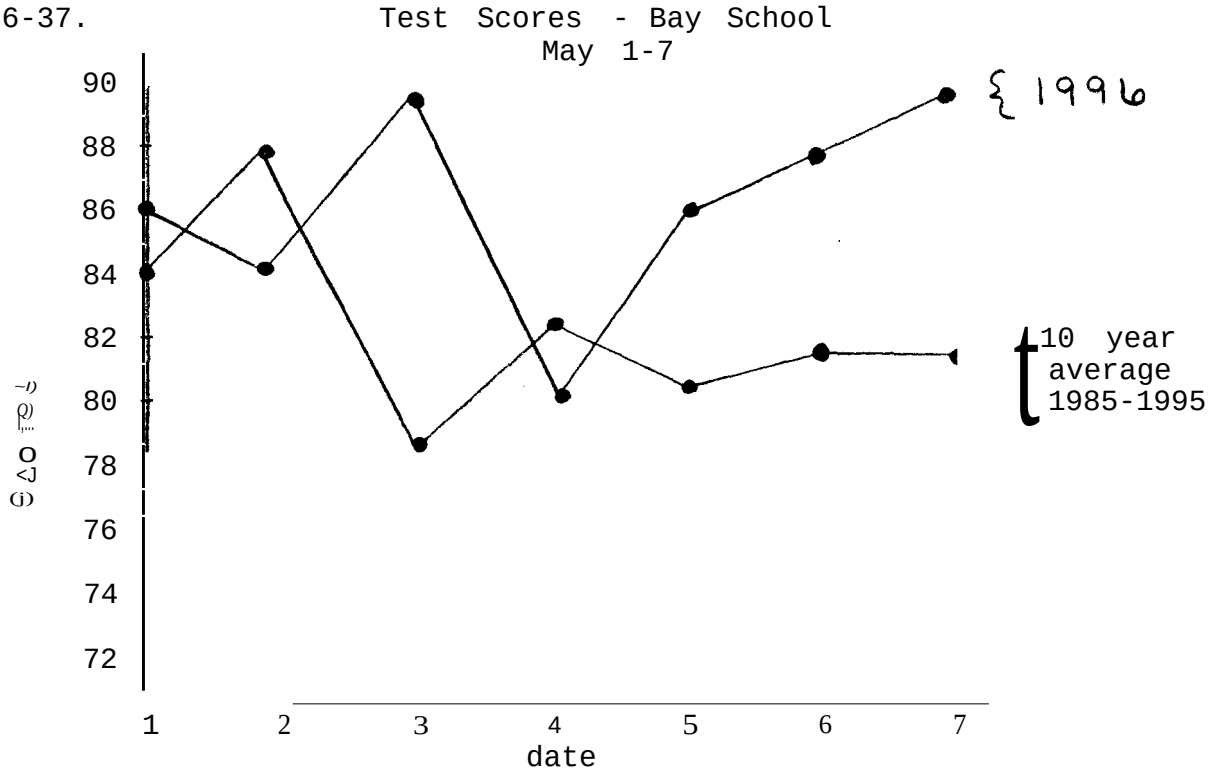
A = B × h
= 6 × 3
18

a. I and II
b. I and III
c. II and III
d. I, II and III
e. none of them are equal

35. Which of the following is the most appropriate unit for describing a piece of wood 3.2 ft long?

a. km
b. dm
c. m
d. cm
e. mm

36-37.



36. Of the seven days shown, about what percent of the days did the ,~q~ test scores exceed the average test scores?

a. 3%
b. 4%
c. 43%
d. 71%
e. 85%

d

37. Between which two dates shown was the greatest decrease in average scores?

a. May 1-2
b. May 2-3
c. May 3-4
d. May 4-5
e. May 5-6

b

The average scores dropped by 8.
Between the 4th + 5th the average scores dropped by 2
All of the rest were increases.

38. When Julio multiplies $x(x+5)$ he gets x^2+5x as an answer. One way to check this answer would be to

a. divide x by (x+5)

~: ~~~;~: ~X+5) by 5

d. squar~ (x+5) . .

e. plug 1n a pos1t1ve integer for x

39. How many taffy apples were sold at the fair if the 35% of them with peanuts was represented by 70 taffy apples.

a. 140
b. 200
c. 35
d. 70
e. 240

$\frac{wp}{100} \rightarrow \frac{10}{X}$ of ICO

cross multiply $70 \times 100 = 700$ $35x = 7000$

and divide $35 \overline{)7000}$ $\frac{200}{}$ →

40. The product of 2 numbers equals twice the value of one of the two numbers

If the above statement is true, which of the following best represents the relationship?

a. a+b = 2b
b. ab = 2b
c. a-b = 2b
d. ab = ab
e. ab = 2

$AB = 2A$

or

$AB = 2B$

b

Answers - Test 4

1. d
2. e
3. b
4. b
5. d
6. e
7. e
8. a
9. b
10. a
II. e
12. d
13. e
14. a
15. d
16. e
17. d
18. d
19. e
20. b
2I. e
22. d
23. e
24. b
25. e
26. e
27. b
28. a
29. a
30. a
31. b
.32. e
33. d
34. Q
35. e
36. d
37. b
38. e
39. b
40. b